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ABSTRACT

Spanning grades 10-12, the curriculum guide focuse on the preparation phase of career education and attempts to provi the student with opportunities to learn a salable skill or prepare for further education. The career education concept is fused into each academic as well as skill area. The first section presents vocational course offerings in: agricultural mechanics, automotive mechanics, building trades, industrial drafting, industrial wiring, intensive business training, metal trades, and cooperative vocational education. The second section displays career oriented academic course offerings in: art, driver education, English, foreign languages, guidance, health and physical education, home economics, industrial arts, mathematics, music, science, and social studies. An explanation of the scope, sequence, procedure, and major objectives is given for each skill area and sample instructional guides accompany each skill area. The guides contain a table of contents, course description, objectives, information sheets, assignment sheets, and job sheets. Additional instructional materials are listed at the end of each example unit. The appendix provides an annotated multimedia resource directory of career guidance materials. (MW)

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# CAREER–CENTERED CURRICULUM FOR VOCATIONAL COMPLEXES IN MISSISSIPPI

Career Preparation
Exemplary Project #0-361-0067 in Vocational Education
Conducted Under Part D Public Law 90-576

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# FOREWORD

Education in America today appears to be headed into one of the most exciting eras in educational history. A primary reason for this is the apparent desire of educational leaders for common sense change. This educational leadership spans the entire breadth of educational levels from the local to the national. At last, those who have the power to influence change are responding to the frustrations, as well as to the dreams of education's benefactors.

For too long the school curriculum has been dominated by those who have held a rather limited view as to what constitutes an educated person. The result has been a curriculum embracing a long string of "minuses" for its contribution to skill training which leads directly to employment. Even the "muffled" voices of those who have applauded such education have conversely sounded a strange attitude that it is for "someone else's children."

Hopefully, we have now reached a level of educational maturity which practices the concept that "there is dignity in work." When we have reached this pinnacle of educational maturity, teachers at all levels will be willing to take a new look, as they must, at their subject area fields. After having done so, they can be expected to do some "plowing-up" and "resowing" with new and exciting methods, techniques, and media. This means a change in thinking so that preparation for a career becomes accepted as one of the clear and primary objectives of our system of education.

This compilation of ideas, activities, and other information has been done with the desire and hope that it can serve a useful purpose in the hands of classroom teachers, counselors, career education leaders, and school administrators. It represents the results of a rather extensive effort to incorporate a career education concept into a massive public school system.

J. H. McMinn, Coordinator
Research, Curricula & Teacher Education
Division of Vocational-Technical Education

# ACKNOWLEDGMENTS

The compilation of this Curriculum Guide for Career Education was made possible by contributions from numerous individuals. Deep appreciation is offered to all contributors for their time, effort, and talents to make this publication possible. Special acknowledgment is extended to the following:

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The Board of Education of Jones County

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The parents and students of Jones County

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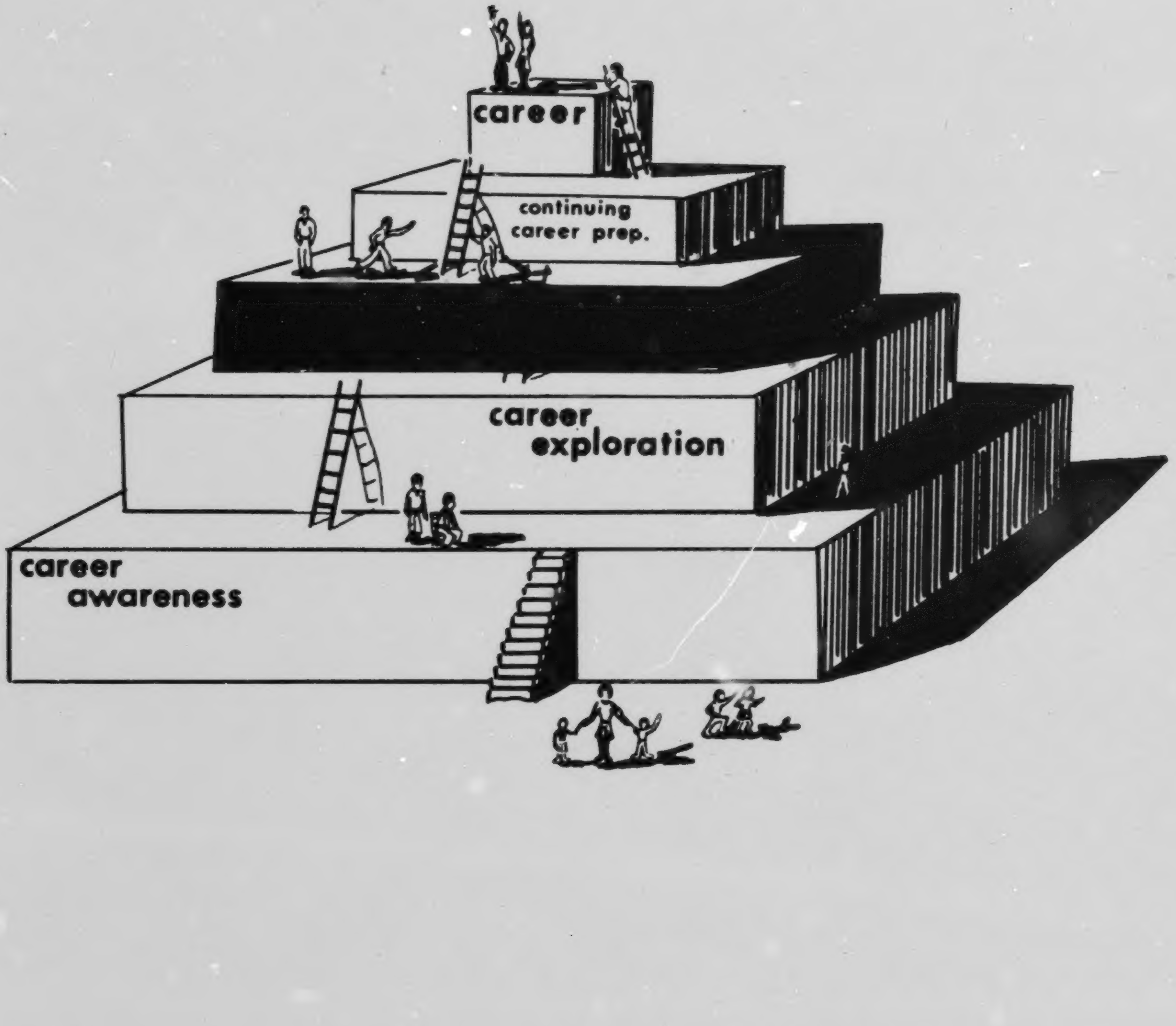
The evaluators on the state, regional, and national levels

The Research Coordinating Unit and the Curriculum Coordinating Unit at Mississippi State University

The Guidance Department at the University of Southern Mississippi

The resource guests who visited the Jones County Exemplary Program

# Career Education


career
continuing
career prep.
career
exploration
career
awareness

# CAREER EDUCATION PHASES

AWARENESS PHASE – A time element within the career education concept denoting grades K-6 of the traditional school organization. This denotes the segment of education for orienting the students to their total environment. It should serve as a time devoted to awakening the interest areas of the student, while molding wholesome attitudes and images toward himself and society.

EXPLORATION PHASE – A time element within the career education concept, spanning grades 7-8 and sometimes grade 9 of the traditional school organization. This denotes the segment of education used to explore the student's occupational interest areas, while developing certain decision making skills. The exploration phase may, for some students, be extended to grade 12.

PREPARATION PHASE – A time element within the career education concept denoting grades 10-12 of the traditional school organization. This indicates the segment of education for developing primary competencies for both job entry and environmental maintenance which is labeled by some proponents of career education as " . . . skills to live by."

CONTINUING CAREER PREPARATION – A time element in the career education concept used for upgrading and continual development of one's competencies.

# Introduction

The preparation phase serves as a plateau in the educational process for the student to consumate the knowledge, ideas, and interests gained during the awareness and the exploration phases of the career education concept. This phase usually begins in grade 10 and continues through grade 12, or until the student finishes the program. There is a sincere attempt to remove artificial constraints and to provide the student with opportunities to learn a salable skill or to prepare to further his education in an institution that offers vocational, technical, and/or professional training.

This program is focused on student needs and is student oriented due to the coordinated efforts of the advisory committees, craft committees, administrators, supervisors, counselors, instructors, university personnel, students and local employers. These groups have worked closely and untiringly in planning and compiling courses of study to meet the needs of students. Activities and procedures are designed to prepare the student to attain entry-level skill proficiency that will enable him to meet requirements for employment. Various academic areas that will serve as prerequisites to higher education are offered for the student who prefers to prepare for technical or professional training. The career education concept is fused into each academic as well as each skill area in an attempt to relate abstract subject matter to real life experiences and to future careers.

In skill training areas, in academic areas, and in the entire learning environment, the student is encouraged to develop a positive attitude toward work and toward fellow workers; to view education as a means to a desired end; to identify alternative career choices; to think independently and constructively; to compare the values of a work-oriented society with personal values; and to strive for a realistic, meaningful and satisfying life-style. Instruction in many cases is individualized. Each instructor's approach to individualizing instruction/learning is unique. The instructor utilizes the technique which is most appropriate for the skill or the academic area to be learned, and the best technique for the individual student who is involved in the learning process.

The purpose of this document is to identify the skill areas and academic areas that are offered in the preparation phase of the Jones County exemplary program and the procedures used for implementing the career education concept into the preparation phase.

## Educational Goals

1. To offer vocational skill training that will allow students to develop specific competencies required to secure and to successfully maintain employment.
2. To offer students a variety of vocational skill training that is appropriate to meet the needs of students and to meet the changing needs of the world of work.
3. To provide a learning environment that will facilitate and motivate learning; encourage curiosity; challenge students; relate classroom experiences to real life experiences; encourage

students to explore self, assess individual worth and to strive toward a satisfying life-style.

4. To promote the convergance of academic and skill areas of education into a total educational enterprise and to include local employers and community leaders.
5. To fuse the career education concept into all academic areas and all skill areas.

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## Use of This Publication

The format and content of this document may need some clarification. The skill areas, academic areas and the various diversified services are listed. An explanation of the scope, sequence, and procedure, which includes the application of knowledge gained by the student, is given for each skill area that is listed. The scope and sequence are given in the table of contents which is included in each skill area. The table of contents is followed by an example of an instructional unit. Each job listed in the table of contents is learned by the same process. Instructional materials used in the teaching/learning environment are listed at the end of each example unit.

### Example Units from Instructional Guides

Instructional guides for skill areas have been compiled by R/CU personnel at Mississippi State University and have been secured from other sources. The guides usually contain a table of contents, course description, objectives, information sheets, assignment sheets, and job sheets. Additional instructional materials are used to supplement the guides, and they will be listed at the end of each example unit. Careful study of the table of contents of this document and of the table of contents in each example unit will help to determine:

A. The number of skill areas and academic areas that are offered.

B. The training procedure used to help the student develop competency in a skill.

C. The supplementary instructional materials used to reinforce learning.

D. The objectives, teaching techniques, methods of evaluation, texts, and references used in academic course offerings.

E. The fusion of the career education concept into academic course offerings.

## Vocational Course Offerings

1. Agricultural Mechanics
2. Automotive Mechanics
3. Building Trades
    A. Carpentry
    B. Masonry
    C. Electricity
    D. Plumbing
4. Industrial Drafting
5. Industrial Wiring
6. Intensive Office Training
7. Metal Trades
8. Cooperative Vocational Education
9. Vocational Guidance

# AGRICULTURAL MECHANICS

### Purpose of Agricultural Education

The major purpose of the agricultural education program is to provide quality education as a part of the total program of public education in agriculture and renewable natural resources. Programs should be available for all persons in all geographical areas preparing for employment, those employed, and those continuing education for occupations requiring knowledges and skills in the broad field of agriculture.

### Instruction in Agricultural Education

Agriculture is comprised of the group of related courses or units of subject matter which are organized for carrying on learning experiences concerned with the preparation for or upgrading in occupations requiring knowledge and skills in agriculture subject. The functions of agricultural production, agricultural supplies, agricultural mechanization, agricultural products (processing), ornamental horticulture, forestry, agricultural resources, and the services related thereto, are emphasized in the instruction designed to provide opportunities for pupils to prepare for or improve their competencies in agricultural occupations.

### Major Objectives of Agricultural Education

The major program objectives are as follows:

1. To develop agricultural competencies needed by individuals engaged in, or preparing to engage in, production agriculture.
2. To develop agricultural competencies needed by individuals engaged in, or preparing to engage in, agricultural occupations other than production agriculture.
3. To develop an understanding of and appreciation for career opportunities in agriculture and the preparation needed to enter and progress in agricultural occupations.
4. To develop the ability to secure satisfactory placement and to advance in an agricultural occupation through a program of continuing education.
5. To develop those abilities in human relations which are essential in agriculture occupations.
6. To develop the abilities needed to exercise and follow effective leadership in fulfilling occupational, social, and civic responsibilities.*

# A Guide for Teaching

# AGRICULTURAL MECHANICS

Developed by
Working Committee on Agricultural Curriculum
**Ronald A. Brown**
**Charlie Thames**
**B. B. Robbins**
**A. E. Eichelberger**
**Jasper S. Lee, Chairman**

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**Division of Vocational and Technical Education**
**Jackson, Mississippi**

1972

## PUBLICATIONS RELATED TO PLANNING AGRICULTURAL EDUCATION PROGRAMS

| | |
|---|---|
| 1000 | A Guide for Planning Programs in Agricultural Education |
| 1001 | A Guide for Planning Instruction in Agricultural Education |
| 1002 | A Guide for Planning Instruction for Adults in Agricultural Education |
| 1003 | A Guide for Teaching Basic Agriculture |
| 1004 | A Guide for Teaching Agricultural Production |
| 1005 | A Guide for Teaching Agricultural Supplies/Services |
| 1006 | A Guide for Teaching Agricultural Mechanics |
| 1007 | A Guide for Teaching Agricultural Products |
| 1008 | A Guide for Teaching Ornamental Horticulture |
| 1009 | A Guide for Teaching Agricultural Resources |
| 1010 | A Guide for Teaching Forestry |

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PROVIDING INSTRUCTION IN AGRICULTURAL MECHANICS

*Purpose ....................................................................
*Objectives .................................................................
*Classification of Occupations ..........................................

OUTLINE OF INSTRUCTION IN AGRICULTURAL MECHANICS

I. Determining the Occupational Opportunities in Agricultural Mechanics ...
II. Developing Leadership for Occupations in Agricultural Mechanics ........
III. Understanding the Occupational Experience Program in Agricultural Mechanics ........................................................
IV. Understanding Safety and Sanitation in Agricultural Mechanics ..........
V. Understanding the Economics of Agricultural Mechanics ................
VI. Soil and Water Technology ..............................................
* VII. Agricultural Power and Machinery .......................................
VIII. Welding ....................................................................
IX. Concrete and Masonry ....................................................
X. Painting, Preserving, and Finishing ....................................
XI. Buildings and Structures ................................................
XII. Tool Fitting ..............................................................
XIII. Plumbing ..................................................................
XIV. Surveying .................................................................
XV. Electricity ................................................................
XVI. Metals (Hot, Cold, Sheet) ...............................................
Suggested Ranges of Time for Instruction ....................................

* Shown in this Section

## Providing Instruction in Agricultural Mechanics

### Purpose

This guide was prepared to assist teachers of agricultural education in developing local programs of study for students who have chosen agricultural mechanics as their occupational objective. Programs in agricultural mechanics should be developed after extensive effort has been made to determine the local needs for such a program.

One of the most important functions of an agricultural mechanics program is to provide students with realistic work experiences. This is best done through an occupational experience program. Such programs may be concerned with either on-farm or off-farm occupations.

### Objectives

Objectives of instruction in agricultural mechanics may vary considerably from one school to another. However, several suggested objectives may be as follows:

1. To develop the knowledge and skill required for entering and advancing in employment in agricultural mechanics occupations.
2. To develop the human relations traits required for success.
3. To develop the leadership abilities necessary for success.
4. To develop the knowledge and skills that are essential for students wishing to enroll in advanced mechanics education programs.

### Classification of Occupations

The system of classification of occupations and code numbers as used by the United States Office of Education applies to the instruction outlined in this publication. The code number and description for agricultural mechanics are listed as follows:

01.03 **AGRICULTURAL MECHANICS**

A combination of subject matter and activities designed to develop abilities necessary for assisting with and/or performing the common and important operations or processes concerned with the selection, operation, maintenance, and use of agricultural power, agricultural machinery and equipment, structures and utilities, soil and water management, and agricultural mechanics shop, including kindred sales and services.

---

***Vocational Education and Occupations.** Washington: U.S. Office of Education, July, 1969.

# Outline of Instruction in Agricultural Mechanics

An outline of suggested instruction in agricultural mechanics is presented here. It is designed to be used in teaching students who have previously received instruction in Basic Agriculture. Teachers may want to make modifications in the instructional content so that local needs are more nearly met.

Teachers are reminded that an outline of the basic principles relating to the areas of instruction is not presented. Basic principles should be taught as needed. In effect, basic principles are concerned with understanding the "why" and are sometimes known as background information.

### I. Determining the occupational opportunities in agricultural mechanics

A. Importance of agricultural mechanics
   1. Definition of "agricultural mechanics" and "agricultural mechanics occupations"
   2. Changes in farming as related to agricultural mechanics

B. Scope of agricultural mechanics occupations
   1. Location (local, state, national, and international)
   2. General nature of the work
   3. Qualifications for employment

C. Kinds of work in agricultural mechanics businesses
   1. Professional
   2. Technical
   3. Managerial
   4. Sales
   5. Service

D. Trends in employment
   1. Greater need for persons with agricultural education
   2. Changes in technology require new skills

**Student Activities**

1. Have students make a survey of businesses concerned with agricultural mechanics. Determine the number of such businesses, the kind and number of agricultural mechanics occupations, and the opportunities for future employment.

(Example Unit)

## VII. Agricultural power and machinery

A. Internal combustion engines (Use small gasoline engines to teach basic principles of internal combustion engines.)

1. Theories of operation
2. Engine types
3. Power measurements
4. Using internal combustion equipment
5. Power plant construction, terminology, maintenance, service and use
    a. Lubricating systems
        (1) Kinds of lubricating systems
        (2) Lubricants — engine oil
            (a) Function
            (b) Grade
            (c) Classification
        (3) Lubricants — gear oils, hydraulic oils, greases

**Student Activities**

Have students perform the following activities:

1. Review and become familiar with the contents of operator's manuals.
2. Identify engine oils, SAE grade and API service classification.
3. Check oil level in an engine.
4. Drain oil, remove oil pan and pump, then inspect, repair and/or replace oil pump.
5. Clean oil screen and crankcase breathers.
6. Clean all oil lines and oil passages in cylinder block.
7. Change oil and filter.
8. Inspect, repair and/or replace relief valve.
9. Remove, inspect, repair and/or replace oil pressure gauge.
10. Pack wheel bearings.
11. Lubricate grease fittings with grease gun.

b. Fuel systems and fuels
    (1) Fuels and principles of combustion

    (2) Types of fuel systems
    (3) Governors
    (4) Air cleaners
    (5) Intake and exhaust systems
    (6) Emission control systems

**Student Activities**

Have students perform the following activities:

1. Remove, clean, and replace fuel tank.
2. Clean fuel filter.
3. Remove, clean, inspect, repair and/or replace fuel line.
4. Test fuel pump (pressure and vacuum).
5. Remove and install fuel gauge.
6. Remove, clean, inspect, repair and/or replace carburetor.
7. Assemble and adjust carburetor.
8. Check valves for leaks on L.P. gas engines; repair if necessary.
9. On diesel engines remove and replace lines, filters, and warning devices.
10. Injection pump — clean around pump and time pump.
11. Arrange for students to visit a shop that repairs fuel injectors or view a film on fuel injection systems.
12. Governors — clean and adjust.
13. Intake and exhaust —test for leaks and replace manifold bolts, gaskets, pipes, mufflers, and tail pipe if necessary.

c. Cooling systems and coolants
    (1) Liquid
    (2) Air
    (3) Safety

**Student Activities**

Have students perform the following activities:

1. Drain coolant from system.
2. Remove, inspect, and replace water hoses.
3. Remove, inspect, repair and/or replace radiator cap.
4. Remove, clean, inspect, repair and/or replace radiator, thermostat, fan, water pump, and fan belt.
5. Inspect and clean water jacket.
6. Remove and install new expansion plug.
7. Check antifreeze solution.
8. Calculate amount of antifreeze needed.
9. Inspect system for leaks.
10. Replace head gasket; torque head bolts.

d. Electrical systems
  (1) Magneto
  (2) Battery ignition
  (3) Generators, alternators, and accessories
  (4) Starters
  (5) Solid state or transistorized ignitions
  (6) Safety

**Student Activities**

Have students perform the following activities:

1. Check voltage and amperage of battery.
2. Connect batteries in parallel and series.
3. Work problems using Ohm's Law.
4. Make an electromagnet.
5. Clean battery and terminals.
6. Remove and replace cables and battery.
7. Service, test, and charge battery.
8. Test starter.

9. Repair or replace starter brushes, switch, and relay.
10. Replace regulator.
11. Clean and adjust contact points.
12. Remove, test, and replace coil, condenser, breaker points, distributor cap and rotor.
13. Inspect, repair and/or replace ignition wires.
14. Service spark plugs.
15. Time distributor to engine.
16. Remove, check, repair, and/or replace magneto coil, condenser, bearings, rotor, breaker points, gears, and shaft.
17. Time magneto.
18. Check and service lighting system.
19. Check, repair, and/or replace instruments such as speedometer, gauges, etc.

e. Engine testing and tune-up
   (1) Timing the ignition system
   (2) Adusting valve clearance
   (3) Testing engine compression
   (4) Checking distributor cap, terminals, rotor, vacuum advance, and wiring

**Student Activities**

Have students perform the following activities:

1. Time an ignition system.
2. Set valve clearance.
3. Operate dynamometer, check and adjust engine speed, compression, vacuum, fuel mixture, fuel consumption, fuel pump, and engine timing.
4. Practice trouble-shooting.

f. Hydraulic systems
   (1) Introduction, function, operation
   (2) Reservoirs

    - (3) Pumps
    - (4) Fittings
    - (5) Coolers and filters
    - (6) Valves and lines
    - (7) Cylinders
    - (8) Seals and packing
    - (9) Safety

**Student Activities**

Have students perform the following activities:

1. Diagnose trouble in hydraulic system.
2. Service hydraulic system.

- g. Braking system
    - (1) Importance and function of braking systems
    - (2) Friction as a principle in the operation of braking systems
    - (3) Types and operation of braking systems
    - (4) Maintenance and repair of braking systems
    - (5) Safety

**Student Activities**

Have students perform the following activities:

1. Trouble shoot and diagnose braking system.
2. Disassemble brake lining.
3. Replace brake lining.
4. Repair/replace brake drum or disc.
5. Repair/replace brake linkage, springs, pins and/or balls.
6. Assemble brake mechanism.
7. Adjust brake pedal clearance.
8. Test brakes.

h. Steering system
  (1) Types, including principles of operation
  (2) Maintenance and repair of common steering systems
  (3) Safety

**Student Activities**

Have students perform the following activities:

1. Lubricate steering system.
2. Adjust worn gear bearing.
3. Adjust sector shaft.
4. Test steering.

i. Wheels and tires — traction systems
  (1) Wheel assemblies
  (2) Weights
  (3) Types of tires
  (4) Inflation
  (5) Slippage
  (6) Safety

**Student Activities**

Have students perform the following activities:

1. Service front wheel bearings and seals.
2. Add dry and liquid weights.
3. Inflate tires properly.
4. Fix flats.
5. Adjust wheel spacing.
6. Adjust wheel lugs.
7. Check slippage.

B. The parts of machines
   1. Materials used in constructing machines
      a. Nonmetallic
      b. Metallic
   2. Component parts
      a. Bearings
      b. Fastening devices (keys, bolts, etc.)
      c. Others

**Student Activities**

1. Have students practice lubricating bearings, determining extent of wear on bearings, and replace bearings.
2. Have students practice using different types of fastening devices.

C. Transmission of power
   1. Principles of power transmission
   2. Direct drive
   3. Pulleys and belts
   4. Sprocket wheels and chains
   5. Gears
   6. Shafts and universal joints
   7. Flexible shafts
   8. Safety

**Student Activities**

1. Have students identify methods of transmission of power.
2. Have students observe the common safety shields and devices used in the transmission of power.

D. Tractor design

E. Power train
   1. Clutch system

    a. Types of clutches
    b. Purpose and function
    c. Location
    d. Nomenclature
    e. Using the clutch
    f. Adjustments
    g. Operating principles
    h. Throw-out bearing
    i. Pressure plate
    j. Lubrication

**Student Activities**

Have students perform the following activities:

1. Adjust clutch linkage.
2. Adjust petal clearance.
3. Test and trouble shoot clutch assembly.

2. Transmission system
    a. Purpose
    b. Operation
    c. Gear ratio and travel speeds
    d. Types and construction
    e. Lubrication
    f. Safety

**Student Activities**

Have students perform the following activities:

1. Adjust shift linkage.
2. Repair or replace shift linkage.
3. Replace top cover and gasket.
4. Drain and refill transmission.
5. Service transmission.

3. Differential drives and axles
    a. Theory of operation
    b. Purpose
    c. Construction and nomenclature
    d. Gears, ratios, bearings, and bearing adjustments

**Student Activities**

Have students perform the following activities:

1. Trouble shoot drives and axles.
2. Drain, flush, and refill rear axle housing.

4. Power take-off
    a. Types
    b. Controls
    c. Lubrication
    d. Adjustments
    e. Protective devices and safety
    f. Bearings
    g. Seals
    h. Shields

**Student Activities**

Have students perform the following activities:

1. Inspect power take-off units.
2. Replace safety shields.

5. Universal joints
    a. Types
    b. Purpose and function

c. Lubrication
d. Protective devices
e. Safety

**Student Activities**

Have students perform the following activities:

1. Trouble shoot universal joints.
2. Remove and replace drive shaft.
3. Remove and replace universal joints.
4. Lubricate universal joints.
5. Replace slip joint seal.
6. Inspect, remove and replace grease fittings.
7. Test universal joints.

F. Selecting, servicing, operating, adjusting, maintaining, and repairing special equipment

1. Feed mills
2. Post hole diggers
3. Crop drying equipment
4. Farm loaders
5. Elevators
6. Backhoes
7. Power saws
8. Lawn mowers
9. Others

**Student Activities**

1. Have students review operator's manuals for various special equipment.
2. Have students perform servicing jobs on special equipment.
3. Have students practice general maintenance and operation procedures on special equipment.

G. Land preparation equipment
    1. Use of operator's manual
    2. Types of land preparation equipment
        a. Trailer-hitch moldboard plows
        b. Mounted tractor-operated moldboard and disk plows
        c. Two-way moldboard plows
        d. Multiple-bottom plows
        e. Multiple-disk plows
        f. Cutting and pulverizing disks
        g. Stalk cutters
        h. Harrows
        i. Sub-soil equipment
    3. Selection and use
    4. Operation
    5. Service requirements

**Student Activities**

Have students perform the following activities with land preparation equipment:

1. Disassemble and inspect.
2. Repair or replace worn parts.
3. Assemble.
4. Adjust.
5. Lubricate.
6. Test and use.

H. Planting equipment
    1. Use of operator's manual
    2. Types
        a. Grain drills

    - b. Corn planters
    - c. Cotton planters
    - d. Broadcast seeders
    - e. Plant-setting machines
    - f. Sod seeders
    - g. Fertilizer attachments
  - 3. Selection, adjustment, and use
  - 4. Operation
  - 5. Service requirements

**Student Activities**

Have students perform the following activities on planting equipment:

1. Inspect.
2. Disassemble.
3. Repair and/or replace worn parts.
4. Assemble.
5. Adjust.
6. Lubricate.
7. Test and use.

- I. Cultivating equipment
  - 1. Use of operator's manual
  - 2. Types
    - a. One-row cultivator
    - b. Two-row cultivator
    - c. Four-row cultivator
    - d. Lister-cultivator
    - e. Weeder or weeder-mulcher
    - f. Chemical weeders

    - g. Flame weeders
    - h. Plant blocker
    - i. Rotary chopper
    - j. Rotary hoe
3. Selection, adjustment, and use
4. Operation
5. Service requirements

**Student Activities**

Have students perform the following activities on cultivating equipment:

1. Inspect.
2. Disassemble.
3. Repair and/or replace worn parts.
4. Assemble.
5. Adjust machine (calibrate).
6. Lubricate machine.
7. Test and use.
8. Practice safety.

J. Harvesting equipment
  1. Use of operator's manual
  2. Types
    - a. Mowers
    - b. Rakes
    - c. Balers
    - d. Loaders
    - e. Stackers
    - f. Hay choppers
    - g. Headers
    - h. Grain binders
    - i. Portable conveyors and elevators
    - j. Forage binders

    k. Ensilage cutters
    l. Combine harvester-thresher
    m. Ensilage blowers
    n. Corn pickers
    o. Cut-off corn harvesters
    p. Field corn shellers
    q. Cotton strippers
    r. Cotton pickers
    s. Other specialized harvesting equipment
  3. Selection, adjustment, and use
  4. Operation
  5. Service requirements

**Student Activities**

Have students perform the following activities on harvesting equipment:

1. Inspect.
2. Disassemble.
3. Repair and/or replace worn parts.
4. Adjust or calibrate.
5. Lubricate.
6. Test and use.

K. Spraying and dusting equipment
  1. Use of operator's manual
  2. Types
    a. Preemergence
    b. Postemergence

    - c. Lay-by
    - d. Boom
    - e. Boom jet
    - f. Fumigation
    - g. Knapsack
    - h. Hand
    - i. Hi-boy
    - j. Other
3. Selection, adjustment, and use
4. Correct and safe operation
5. Service requirements

**Student Activities**

Have students (a) trouble shoot, (b) operate, (c) adjust, (d) clean and lubricate, (e) perform maintenance jobs, and (f) practice safety in using spraying and dusting equipment.

L. Storing agricultural machinery and equipment
1. Importance of proper storage
2. Facility design
3. Special considerations in storage
    - a. Winterizing
    - b. Protection from dust, moisture, etc.
4. Post-storage care

**Student Activities**

1. Have students make a survey of machinery and equipment storage facilities in the community. Determine the number of farms with adequate storage facilities.
2. Have students design a storage facility for a farm with inadequate facilities.
3. Have students put an agricultural machine in storage.

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# AUTOMATIVE MECHANICS

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## A TEACHER'S OUTLINE FOR USE IN ORGANIZATION AND MANAGEMENT OF INSTRUCTION

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    "Elementary Fundamentals of Electricity as Applied to the Automotive Electrical System"

## HOW TO USE THIS PUBLICATION

1. Note major sections in the the TABLE OF CONTENTS; read and study carefully the entire guide.
2. Begin a shop library, using the BIBLIOGRAPHY.
3. Adapt, (with the help of an advisory committee) course content to your local situation by sequencing; add, and/or delete suitable jobs and related information.
4. Make and post a progress chart (see APPENDIX for example).
5. Plan well in advance what to teach. Choose the job to be taught from the right hand column of the COURSE OF STUDY. Develop instructional sheets to use in teaching (see APPENDIX for samples). Do not attempt to teach directly from this course of study.
    - 5a. Select several references from the shop library.
    - 5b. Prepare a lesson plan from which to present the trade principles that apply to the trade practice (job), and/or demonstrate the performance of the job. These principles are found in the course content opposite the job to be taught.
    - 5c. Prepare an assignment sheet which covers the information, in the text or references, to be taught in the lesson presentation.
    - 5d. Prepare a job sheet which explains what is to be done.
    - 5e. Prepare operation sheets which explain how to accomplish those steps in completing the job with which the student is not familiar.
    - 5f. If the student needs information to complete the job which is not available or not clear in the text or references, prepare information sheets.
6. Acquire or prepare visual aids called for on instruction sheets.
7. Make assignments with assignment sheets prior to presenting the lesson. After the lesson information has been presented and/or the demonstration completed, pass out the appropriate job sheet and the necessary operation and information sheets.
8. Assign jobs after the student has received instruction necessary for safety and efficient completion of the job. Some students will not progress as rapidly as others and will need more attention and time.
9. Evaluate student's progress (as shown on the sample instruction sheets). Mark each student's progress, and give a new assignment.

## COURSE DESCRIPTION

### GENERAL OBJECTIVE

To assist the trainee in developing knowledges and skills which prepare him to enter the automotive-repair trade on the advanced-leaner's level, and to make progress after employment.

### ASSUMPTIONS

That an effective program of vocational guidance has assisted would-be trainees in assessing their potentials and selecting appropriate training; that those enrolled have the following characteristics:

1. No previous experience in automotive-mechanics service
2. A vocational commitment to the automotive-mechanics service trade
3. A general mechanical aptitude

### DESIRABLE PREREQUISITES

That trainees have a background in elementary mathematics and in general science

NOTE: Those desiring to enroll who lack the above prerequisites should be counseled concerning their deficiencies and then assigned to remedial courses when these are available. It is not recommended that a person lacking the above prerequisites be denied training.

### NATURE OF THE TRAINING

1. The duration of the training is normally three hours per day, five days per week, thirty-six weeks per year for two years; or, six hours per day, five days per week, thirty-six weeks per year for one year - a total of 1080 clock hours of training.

2. Related instruction by lecture, demonstration, the use of audio-visuals, etc. immediately precedes application by the trainee in shop practice; instruction and its application are correlated as closely as possible at all times; and the major allotment of time is given to the development of manipulative skills.

3. The trade instructor must accept the responsibility for teaching both skills and knowledges, in that no instruction directly related to the trade is offered outside the shop.

## CONTENT AND EMPHASIS IN TRADE PRINCIPLES

Systematic and purposeful presentation of the following:

1. A thorough coverage of the components of the engine and the engine systems, which includes nomenclature, functions, and typical service required.
2. A thorough coverage of fundamental electrical data, of the characteristics of fuels and lubricants, of principles of fluid and air-flow, and of basic mechanics.
3. A thorough coverage of the drive train (except transmissions) and the major components, which includes nomenclature, function, and typical service required.
4. Broad coverage of manual and automatic transmissions, with the greatest emphasis on the operation of the automatic type including external service adjustments.
5. Broad coverage of steering and suspension.

## LEVELS OF ABILITY IN TRADE PRACTICES

1. Full use of all hand tools and small power tools.
2. Full use of fuel and electrical test equipment.
3. Marketable skill in disassembly and cleanup of components in the engine, drive train, suspension, and steering.
4. Marketable skills in service of certain components such as grinding valves and seats, turning starter commutators, and

minor components, rebuilding the brake system, rebuilding carburetors, and performing tune-ups; all such service is under the supervision of an experienced mechanic.

## INSTRUCTIONAL BLOCKS

Each of the instructional blocks which follows carries a contact hour allotment. These allotments indicate relative emphasis and are not to be strictly adhered to.

| | | Contact Hours |
|---|---|---|
| I. | ORIENTATION | 20 |
| II. | TOOL USAGE | 35 |
| III. | SERVICE OPERATION | 125 |
| IV. | ENGINES | 180 |
| V. | COOLING | 30 |
| VI. | TUNE-UP | 105 |
| VII. | ELECTRICAL | 45 |
| VIII. | POWER TRAIN | 180 |
| IX. | BRAKING SYSTEM | 90 |
| X. | SUSPENSION | 150 |
| XI. | STEERING SYSTEM | 75 |
| XII. | SPECIAL PROBLEMS | 45 |
| | Total Contact Hours | 1080 |

# DESCRIPTION OF FIRST YEAR'S TRAINING

The high school student should be instructed during the first year in all phases of engine overhaul, cooling system functions, tune-up operations, and electrical system functions. The purpose of the first year's training is to give the student a broad understanding of the mechanical make-up of all systems and the individual performance of various components used in the construction of individual systems.

Emphasis should be placed on replacing assemblies such as rebuilt blocks, water pumps, carburetors, and alternators. The student upon completion of all blocks taught during the first year should be capable of removing and installing, in any passenger car, rebuilt or reconditioned components. He should be able to remove and replace component parts with a high degree of efficiency.

Upon completion of the first year's work the student should know how each individual system works in relation to other systems necessary for efficient performance of the automobile.

(Example Unit)

## IV. ENGINES

*(Contact hours 180)*

*Trade principles* | *Trade practices*

A. Descriptive Terms
   1. Horsepower
   2. Torque
   3. Displacement
   4. Volumetric efficiency

B. The Four-stroke Cycle
   1. Intake stroke
   2. Compression stroke
   3. Power stroke
   4. Exhaust stroke

C. General Description of the Engine
   1. Block and head assembly
   2. Electrical system
   3. Fuel system
   4. Cooling system
   5. Lubricating system

D. Block and Head Assembly
   1. Components
      a. Head
      b. Block
      c. Piston
      d. Valves

NOTE: See Appendix Information Sheet "Cleaning of Engine and Parts"

e. Spark plug

f. Rods

g. Crankshaft

h. Camshaft

2. Combustion chamber configurations

a. Wedge

b. Hemisphere

c. Other

E. The Head

1. Metal composition

2. Types by valve location

a. L

b. I

c. F

3. Types by service

a. Removable

b. Non-removable

4. Sealing techniques

a. Gaskets

b. O-rings

5. Specification

a. Gasket surface condition

b. Combustion chamber

c. Tightening sequence

d. Torque specifications

NOTE: See Appendix Job Sheet "Replace a Head Gasket"

Replace a head gasket. Refer to appropriate shop manual. Remove, clean, and inspect cylinder head(s) using special tools such as carbon scrapers, carbon brushes, straight edges, magnaflux, etc. Remove old head gasket, clean cylinder surface, install new gasket, reinstall cylinder head observing proper torque procedures.

F. The Valves

1. Location

2. Types

a. Poppet

b. Other

(1) Reed

(2) Sleeve

3. Valve train components

a. Valve

b. Seat

c. Spring

d. Seal

e. Retainer

f. Rocker arm

g. Pushrod

h. Tappet

i. Cam

4. Metal composition

a. CNS (alloy of chromium, nickel, and silicon)

b. Stellite (alloy of cobalt, chrome, and tungsten)

5. Valve specifications

NOTE: See Appendix Job Sheet "Grind Valves and Valve Seats"

a. Face and seat angles

b. Spring tension and height

c. Valve length

Position vehicle

    d. Valve clearance

    e. Allowable wear on stem

  6. Cooling techniques

    a. Metal-to-metal conduction

    b. Water cooling of seats and guides

G. The Block

  1. Metal composition

    a. Cast iron

    b. Aluminum

  2. Block features

    a. Head surface

    b. Water passages

    c. Oil gallery and drilled passages

    d. Core holes

    e. Cylinders

    f. Valve chamber

    g. Main-bearing surfaces

    h. Cam-bearing surfaces

    i. Oil pan surface

    j. Accessory mounting

  3. Cylinder layout

    a. In-line

    b. V-type

properly in bay, cover fenders, and drain coolant. Refer to shop manual. Use hand tools and special tools to remove, inspect, and clean the head(s). Grind valves and seats. Reassemble, making necessary inspection, replacements, measurements, and adjustments.

NOTE: See Appendix Job Sheet "Replace Expansion Plug"

c. Opposed or "flat" block

d. Other

4. Cylinder features

a. Bore (Sleeved & non-sleeved)

b. Length

c. Wall thickness

d. Metal composition

e. Alignment

f. Surface finish

g. Champer around top edge

Remove oil pan and cylinder head(s). Cut cylinder ridge using ridge reamer. Remove connecting rod and piston assembly. Clean cylinder bore. Check for wear according to specifications. Bore if necessary.

5. Main bearings

a. Function

b. Number

c. Composition

d. Alignment

e. Shims

6. Oil pump

H. The Crankshaft Assembly

1. Components

a. Crankshaft

b. Pistons and rod assembly

c. Bearings

2. Crankshaft features

a. Bearing surfaces

    - b. Counterweight
    - c. Oil passages
    - d. Flywheel flange

      NOTE: See Appendix Job Sheet "Replace Flywheel"

    - e. Nose
  - 3. Metal composition
    - a. Cast steel
    - b. Forged steel
  - 4. Specifications
    - a. Sizes and important dimensions
    - b. Clearances
    - c. Alignment

I. The Piston and Rod Assembly

NOTE: See Appendix Job Sheet "Fit and Install Pistons, Pins, and Rings"

  - 1. Piston, pin, and rings
    - a. Function
    - b. Features
    - c. Metal composition
  - 2. Rod and bearing
    - a. Function
    - b. Features
    - c. Metal composition

Remove and disassemble piston and connecting rod assembly. Remove old rings, clean, inspect, and if necessary, repair the piston including ring grooves. Reassemble connecting rods, piston pins, and pistons. Check ring gap clearance. Install rings on pistons and check the assemblies for alignment using rod aligning jig. Using a ring compressor, reinstall assembly in cylinder bore. Fasten rod to crankshaft. Replace cylinder head and oil pan. Refill engine with proper oil and coolant.

J. The Camshaft

NOTE: See Appendix Job Sheet "Replace Camshaft & Bearings"

  - 1. Function and features

| | |
|---|---|
| 2. Types by location<br>a. In the block<br>b. In the head | |
| 3. Metal composition | |
| 4. Drive mechanism<br>a. Chain<br>b. Gear | NOTE: See Appendix Job Sheet "Replace Timing Gears and Chains"<br>Referring to appropriate shop manual, remove radiator, lower fan pulley and timing gear cover. Remove gear(s) or chain, clean and inspect all components as necessary. Align timing marks when installing new gear and/or chain. Install new oil seal and gasket in cover. Replace cover, pulley, fan belt, and radiator. Replenish coolant. |
| 5. Timing techniques<br>a. Aligning marks or dots<br>b. Strobe light<br>c. Degree wheel | Referring to appropriate manufacturer's literature, remove all components necessary to give access to camshaft. Inspect camshaft & bearings for wear. Replace bearings if necessary, using special bearing-remover and replacer tool. Replace camshaft and all components previously removed. |
| 6. Camshaft and valve train parts<br>a. Camshaft<br>b. Camshaft bushings<br>c. Lifters: mechanical & hydraulic<br>d. Pushrods | Refer to manufacturer's specifications to adjust valve lifters or rocker arms using feeler gage or dial indicator. |

| | |
|---|---|
| e. Rocker arms | |
| f. Valve assembly | |
| K. Oil Pump<br>1. Location<br>2. Function<br>3. Replacement techniques | Securely place vehicle on stands or lift. Consult shop manual. Drain oil and remove oil pan. Remove oil pump assembly from engine for cleaning and inspection. Determine wear, and repair or replace oil pump as applicable. Thoroughly clean oil pan and oil lines. Replace pan gasket and pan. Refill crankcase with oil. Start engine and test oil pressure. |
| L. Engine-chassis Connections | |
| 1. Electrical connections | |
| a. Primary ignition | |
| b. Generator or alternator | |
| c. Dash gages | |
| d. Starting circuit | |
| e. Other | |
| 2. Mechanical connections<br>a. Motor supports | NOTE: See Appendix Job Sheet "Replace Engine and Transmission Supports" |
| b. Transmission supports<br>c. Throttle linkage | Remove engine hold-down bolts and nuts from old supports. Raise engine high enough to provide sufficient space to remove supports. Blocking engine securely in place, remove and replace supports as necessary. Lower engine; tighten all nuts and bolts. |
| d. Engine to clutch | NOTE: See Appendix Job Sheet "Replace the Clutch Assembly and Pilot Bearing" |
| e. Transmission shift linkage | NOTE: See Appendix Job Sheet "Adjust External Manual Shift Linkage" |

| | |
|---|---|
| f. Exhaust | Check the exhaust manifold butterfly for free and proper movement; lubricate if necessary. Replace faulty unit.<br>Replace any part of the exhaust system as required (manifold, header pipe, resonator, muffler, tailpipe.) |
| 3. Drive trains | |
| a. Standard transmission | NOTE: See Appendix Job Sheet "Replace a Standard Transmission" |
| (1) 3 speed | |
| (2) 4 speed | |
| b. Automatic | |
| c. Propeller shaft | |
| 4. Fluid connections | NOTE: See Appendix Job Sheet "Start a Rebuilt Engine" |
| a. Fuel lines | |
| b. Oil lines | |
| c. Other | |

# CLEANING AND INSPECTION OF DISASSEMBLED PARTS

Information sheet Code______

All disassembled parts must be thoroughly cleaned in an appropriate cleaning solution. Each part must be free of oil, grease, and carbon. Kerosene and gasoline are easily obtainable solvents for cleaning. However, gasoline is dangerous to use for cleaning purposes because of the possibility of fire or explosion. Special degreasing solutions are also available. Modern steam cleaners furnish compact, mobile source of high-pressure vapor spray that quickly removes oil, grease, and dirt from the engine exterior and the chassis. Steam makes an excellent cleaner because of its high temperature and impact when directed from a pressure nozzle.

When the steam nozzle is directed at the parts to be cleaned, the heat melts or softens the grease and oil. The steam pressure carries the grease, oil, and dirt away leaving clean parts. Evaporation dries them quickly. The steam never heats the parts enough to damage them, but electrical parts should be protected from excessive amounts of moisture.

The use of detergents in steam cleaners greatly accelerates the cleaning action. The detergent generally contains a wetting agent that assures speedier penetration of the dirt deposits. The detergent also breaks up and detaches masses of oil, grease, and solid dirt by its emulsifying action. Steam cleaning is generally performed outdoors because steam produces a great deal of vapor.

Ball bearings and roller bearings are cleaned with a grease solvent. When cleaning such bearings it is not sufficient to merely wash the bearings in the cleaning solution until all grease is removed; they must also be cleaned with air to remove any foreign matter. The bearing must not be allowed to spin at high speed in the air blast, however, because this might cause serious damage to the bearing. The air line used during the cleaning of bearings should be provided with a water trap.

All oil passages and tubes should be thoroughly cleaned with solvent, then blown out with compressed air. A rifle bore cleaning brush is handy in cleaning passages with solvent. The oil pan and oil pump screen should be washed out and thoroughly cleaned of any old oil and sludge.

Remove the piston rings and clean accumulated carbon from the ring grooves and inside the piston. New piston rings should be installed during a major overhaul and the old ones discarded. Remove the piston pins. If new pistons are to be installed, old pistons as well as rings are discarded.

After all parts are thoroughly cleaned, examine all sections of the crankcase for cracks. Cracks in the reinforcing webs may be detected by tapping them with a rawhide mallet. Carefully inspect the main bearing supporting webs of the upper crankcase. All bearing studs should be inspected for looseness.

The main bearings should be inspected for flaking, scratches, high spots, and other signs of damage. Any bearings that show damage should be replaced. The same type of inspection should be made of the connecting rod bearings. Crankshaft bearing journals should be carefully inspected for galling, scratches, ridges, and out-of-roundness. The latter check can be made with a micrometer or dial gage. Journals sometimes become out-of-round or slightly egg-shaped, but a difference in diameter should not exceed .001 of an inch. Where the difference is greater than .002 of an inch, the journals should be reground on a special crankshaft grinding machine and new undersize bearings installed. Make sure that the crankshaft is not bent. The crankshaft may be checked and straightened by placing it between centers on a special crankshaft straightening machine.

After several thousand miles of operation, the cylinder bore may wear out-of-round as well as tapering from top to bottom. Both conditions are caused by side thrust of the piston and pressure of the piston rings against the cylinder walls. In order to check for this condition use a telescope gage and micrometer or a dial indicator to measure the inside diameter of the cylinders at three points: around top, center, and bottom. A difference in diameter exceeding .005 of an inch requires that the cylinders be rebored. A difference in diameter exceeding .002 of an inch but not more than .005 of an inch can usually be corrected by honing. After an engine has been in operation for some time, ridges will be formed at the top of the cylinder bore where piston ring travel ends. The ridge should always be removed by honing or grinding. Where cylinder sleeves are used and the above tolerances are exceeded, the sleeve is replaced instead of reboring it.

To determine whether or not new pistons are required for cylinders not excessively worn, measure the inside diameter of the cylinder bore with the telescope gage and micrometer, noting the point of the smallest diameter; measure the outside diameter of the piston with a micrometer. Make sure that the points at which measurements are taken are on the thrust sides of both parts because many pistons are cam ground, or made purposely out-of-round, during manufacturing. The piston's greatest diameter is then on the thrust side or across the bore. Ideal clearance between the piston and cylinder wall is from .002 of an inch to .0025 of an inch but a clearance of .005 of an inch is not too much for operation. A greater clearance than this should be corrected by installing new pistons.

The most common defect found in connecting rods are twisted or bent spots. Connecting rods should be checked on a special connecting rod aligning arbor. If the twisted or bent spot is not too severe, they may be correctly aligned by using the aligning tool which is a part of the aligning arbor.

Inspect the cooling fan blades for loose rivets and tighten if necessary. If blades are chipped, cracked, or out of line with each other. heavy vibration will set up as well as considerable noise. Blades should be clean, tight, and properly aligned.

Check camshaft bearing journals and bearings for defects, out-of-round, or excessive wear. Measure the inside diameter of the bearings and the outside diameter of the bearing journals. Ideal clearance is .002 of an inch but up to .005 of an inch clearance does not require replacement. A greater difference in diameter than .005 requires the installation of new camshaft bearings.

Inspect the inside surface of the flywheel at the point of its contact with the clutch plate and if badly scored, reface it. If starter ring gear teeth are broken, the ring gear must be replaced. After heating the flywheel and ring gear in a forge or tempering furnace, the old ring gear can be driven off with a heavy hammer. Heat the new ring gear and allow the flywheel to cool. Slip the expanded ring gear over the flywheel in perfect alignment. The assembly should be allowed to cool before attempting to replace it.

# REPLACE A HEAD GASKET

---

Job Sheet Code _____

OBJECTIVE:

To remove a cylinder head, clean the gasket surfaces and the combustion chambers, visually inspect for head and valve damage, install a new gasket, and reinstall the cylinder head - all in a specified length of time using proper tools and procedures on a live engine.

INTRODUCTORY INFORMATION:

The modern automotive engine with its high compression ratio demands clean, true mating surfaces to seal pressures which develop during the combustion stroke. When replacement of a gasket is necessary, the use of proper tools and an efficient procedure are required to hold service time and labor costs at a competitive level while assuring the customer a dependable repair job.

EQUIPMENT, TOOLS, AND SUPPLIES:

1. Live engine
2. Drain pan
3. Hydraulic jack
4. Extension light
5. Safety stands
6. Creeper
7. Drill motor, 1/4 in. with rotary wire brush
8. Carbon scraper
9. Straight edge
10. Torque wrench, 0 - 150 ft. - lb.

11. Prybar
12. Socket wrenches, 1/2 in. drive, with pull handle and ratchet
13. Spark plug socket, 1/2 in. drive
14. Open-end wrenches
15. Box-end wrenches
16. Screwdriver, regular tip
17. Hose-clamp pliers
18. Flare-nut wrenches
19. Small parts tray
20. Head lifters
21. Timing light
22. Tap and T-handle (as required for engine)
23. Head gasket
24. Intake and exhaust manifold gaskets
25. Gasket sealer
26. Thread lubricant
27. Fender covers
28. Shop rags
29. Cleaning solvent, nonflammable

STEPS OF PROCEDURE:

1. Position the vehicle correctly in the bay.
2. Raise the hood and position the fender covers.
3. Jack up the front end and install the safety stands.
4. Drain the coolant through the radiator draincock and catch it in a drain pan.
5. Unbolt the exhaust manifold and loosen the header-pipe connection.
6. Remove the safety stands and lower the vehicle.
7. Mark alignment and remove hood, if necessary.
8. Disconnect spark-plug leads; remove spark plugs.
9. Disconnect coolant hoses, fuel hoses, vacuum lines, wiring, and linkages attached to the head, manifolds, and accessories.

10. Remove the accessories attached to the cylinder head and other components to be removed; refer to the shop manual.

11. Remove the distributor, if necessary.

12. Remove the intake manifold, if necessary.

13. Remove the rocker-arm cover, if necessary.

14. Loosen or remove the rocker arms or rocker-arm assembly; carefully pull the push rods and lay them aside in a known sequence.

15. Remove the head bolts with a socket, extension, and pull handle; note the length and position of bolts.

16. Install headlifters, if necessary.

17. Break the cylinder head from the engine.

18. Lift the head from the engine compartment.

19. Clean the mating surfaces on the head and the block with a carbon scraper; clean the combustion chambers with a rotary brush and/or a carbon scraper; clean the exposed surface of the head with solvent.

20. Check the mating surfaces with a straight edge; visually inspect the combustion chamber, the valve heads, and the mating surfaces for cracks.

21. Apply gasket sealer to the head and block when recommended by the manufacturer.

22. Install head guides and place a gasket over the guides; check for proper positioning.

23. Position the head on the block.

24. Clean the head bolts; apply lubricant and/or sealer.

25. Place the bolts in the proper holes; following recommended sequence; torque to specifications.

26. Insert the pushrods in the proper holes, install and/or adjust the rocker arm, and make initial adjustments of valve-train clearances.

27. Clean the mating surfaces between the cylinder head and the intake manifold.

28. Install the intake manifold gasket, using sealer when recommended.

29. Install the intake manifold and bolts; torque to specifications.

30. Install the distributor, if removed.

31. Reconnect the coolant hoses, vacuum lines, wiring, and linkages.

32. Replace the accessories.
33. Jack up the vehicle and place safety stands.
34. Close the drain cock; connect the exhaust manifold and tighten the header-pipe connection.
35. Remove the safety stands and lower the vehicle; fill the system with coolant.
36. Install and torque spark plugs; check the firing order and connect the spark-plug leads.
37. Start the engine and make adjustments as necessary.
38. When the engine is warm, adjust the valve-train clearances, the timing, and the carburetion.
39. Replace the rocker-arm covers, using new gaskets.
40. Check for leaks, such as coolant, oil, fuel, and vacuum.
41. Replace the hood and check alignment.
42. Remove the fender covers and check the vehicle for soil, grease, and paint damage; clean and/or repair as necessary.
43. Check the vehicle carefully for misplaced and forgotten tools.

PROBLEM:

1. Explain the need for bolt-tightening sequence.
2. Why is a lubricant used on head bolts?
3. How do you check for a vacuum leak between the intake manifold and the head?
4. Why are final valve-train adjustments made when the engine is hot?
5. Why do some factories recommend no sealer between the engine-to-head mating surfaces?

# References

Ford Motor Company. Ford Service Training Transparencies. Dearborn, Michigan: Ford Motor Company.

General Motors Corporation. Shop Manuals. Detroit, Michigan: General Motors Corporation.

Chrysler Corporation. Shop Manuals. New Hyde Park, N. Y.: Chrysler Corporation.

Research and Curriculum Unit. Secondary Vocational Automotive Mechanics: A Teachers' Outline For Use In Organization and Management of Instruction. Mississippi State, Mississippi: R/CU, 1971.

## BUILDING TRADES

Carpentry

Masonry

Electricity

Plumbing

# BUILDING TRADES

## AN INTRODUCTION TO CARPENTRY, MASONRY, ELECTRICITY, AND PLUMBING

## ASSIGNMENT AND JOB SHEETS

PRELIMINARY DRAFT - - FOR DISCUSSION ONLY

Compiled by

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Trade and Industrial Education

Published by

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1971

## HOW TO USE THIS PUBLICATION

1. Turn to the TABLE OF CONTENTS and note the listing of assignment and job sheets; then read and study carefully each assignment and job sheet.
2. Using the BIBLIOGRAPHY as a guide, purchase books to begin a shop library.
3. The local craft committee and instructor should review the contents of this publication to determine if it meets the needs of the local situation. The craft committee may wish to change the sequence and adapt the contents of this publication to fill local training needs.
4. Obtain a progress chart from the State Supervisor, Trade and Industrial Education, P. O. Box 771, Jackson, MS 39205, or make a progress chart (see APPENDIX for example). The progress chart must be placed in the shop and marked correctly so that each student can see how he stands in relation to the other members of the class.
5. Plan well in advance what to teach. Choose the job to be taught from the TABLE OF CONTENTS. Do not attempt to teach directly from the assignment or job sheet.
    a. Select several references from shop library.
    b. Prepare a lesson plan which includes the following: an interesting and stimulating introduction; techniques and aids to be used during presentation of lesson; a list of necessary tools or equipment, materials, and supplies needed during lecture-demonstration on how to perform a specific job; and the names of local resource personnel who can assist you during presentation. The lesson should be presented in a logical sequence so that all important points will be covered (see APPENDIX for example).
    c. Plan the student's assignment in accordance with references from which lesson information will be presented.
    d. Make sure that the job sheet which explains what is to be done is correlated with the assignment sheet.
    e. If any step of procedure is not clear to the student, the instructor should develop an operation sheet which explains in detail an operation, or series of operations, necessary to complete a step of procedure.
    f. If any student is working on a job and needs job related information which is scattered among several references and is incoherent or not available, the instructor should develop an information sheet which contains the desired information.
    g. Acquire or construct visual aids that will be helpful during the presentation of the lesson.
6. Make assignments with assignment sheet prior to presentation of lesson. After the lesson information has been presented and/or lecture-demonstration completed, check the problem assignment to make sure that each student understands exactly what is to be done. Pass out the job sheet and operation or information sheets necessary to complete the job.

7. Assign the jobs after the student has received instruction necessary for safe and efficient completion of the job. Some students will not progress as fast as others and will need more individual instruction and assistance.
8. Evaluate each student's progress and post it on the progress chart.
9. Repeat steps five (5) through nine (9) above for each assignment and job sheet.

## TABLE OF CONTENTS

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I-1 Build a Sawhorse
I-2 Build a Toolbox
*I-3 Build a Miter Box
I-4 Lay Out a Small Foundation
I-5 Mix a Batch of Mortar
I-6 Build a Four-Inch Center Lead–All-Stretcher Bond
*I-7 Build a Four-Inch Corner Lead–All Stretcher Bond
I-8 Build an Eight-Inch Concrete Block Corner Lead
I-9 Build a 16 in. x 16 in. Brick Column
I-10 Build an "X" Pier
I-11 Build a "T" Pier
I-12 Install Switch Boxes
*I-13 Install Single- and Three-Pole Switches
I-14 Install Wall Receptacles
I-15 Install Ceiling Boxes
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I-17 Install Distribution Boxes
I-18 Install and Test Fuses
I-19 Install a Galvanized Water Line
*I-20 Install a Copper Water Line
I-21 Lay a Cast Iron Sewer Line
I-22 Set a Commode
Bibliography: Suggested references
Appendix
Progress Chart
Lesson Plan: Build a Sawhorse

*Shown in this section

# BUILD A MITER BOX

---

**Assignment Sheet** **Code No. I-3**

---

## OBJECTIVES:

To describe the construction of a miter box.

## INTRODUCTORY INFORMATION:

The miter box is used as an aid in making angular cuts. It is especially useful when cutting pieces for the construction of door and window casings. A miter box is used also to cut baseboards and molding because each end must fit perfectly to make an attractive joint.

## REFERENCES:

Durbahn, Fundamentals of Carpentry, Vol. 1, p. 47.
Durbahn, Fundamentals of Carpentry, Vol. 2, 3rd ed.,pp. 319, 382-384.
Mix (editor), Practical Carpentry, pp. 12-14.
Wilson, Practical House Carpentry, p. 55.

TOPICS FOR
SPECIAL EMPHASIS:

1. Correctly holding material while cutting
2. The type saw used to cut molding or trim
3. The procedure used when cutting long pieces of lumber
4. Purpose of miter box
5. Proper construction of miter box
6. Type and size of material used

PROBLEM
ASSIGNMENT:

1. What should you remember when nailing the box together?
2. Can the miter box aid in cutting angles other than 45° and 90°?
3. What wood is best suited for the construction of miter boxes?
4. What is the purpose of a miter box?
5. What is the advantage of constructing your own miter box?

# BUILD A MITER BOX

---

Job Sheet Code No. I-3

---

OBJECTIVES:

To build a miter box.

INTRODUCTORY INFORMATION:

The miter box is very useful to the carpenter when installing baseboard, shoe molding, or ceiling molding. It is a device which enables the carpenter to cut a variety of angles to make attractive joints.

EQUIPMENT, TOOLS, AND SUPPLIES:

Two pieces 1 in. x 6 in. x 36 in., pine or fir
One piece 2 in. x 4 in. x 36 in., pine or fir
Nails
Claw hammer
Handsaw, crosscut
Combination square
Sawhorses or work bench

PROCEDURE:

1. Select 2 pieces of straight 1 in. x 6 in. x 36 in., pine or fir.
2. Select 1 piece of straight 2 in. x 4 in. x 36 in., pine or fir.
3. Place the 2 x 4 on its edge on work station.
4. Place one of the 1 x 6s on top and flush with the end and bottom of the 2 x 4; then nail.
5. Repeat step 4 for other 1 x 6 after turning the 2 x 4 over.
6. Lay out a $90^{o}$ angle in the middle of box (combination square).
7. Lay out a $45^{o}$ angle 6 inches in from the middle (combination square).
8. Repeat step 7 for the other $45^{o}$ angle.
9. Cut all angles very carefully and precisely with a crosscut saw.
10. Study the drawing very carefully.

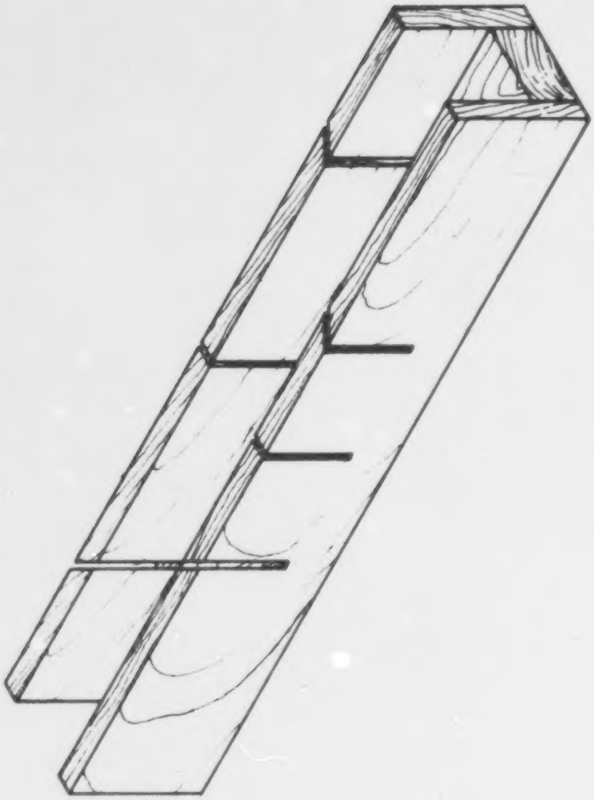
SEE DRAWING

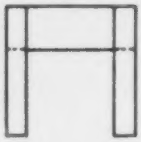
PROBLEM:

Answer the following discussion question on the miter box in complete sentences:

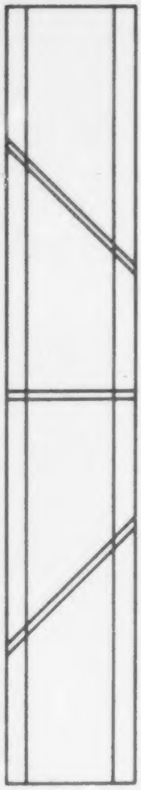
What is the general purpose of the miter box?
What advantage is its use to the carpenter?

I-3





END VIEW



TOP VIEW

# References

Durbahn, Walter E. Fundamentals of Carpentry. Vol. 2, 4th ed. Chicago, Illinois: American Technical Society, 1967.

Feirer, John L. Woodworking for Industry. Peoria, Illinois: Chas. A. Bennett Co., 1963.

Feirer, John L. Cabinetmaking and Millwork. Peoria, Illinois: Chas. A. Bennett Co., 1970.

Lux, Don G., and Ray, Willis E. The World of Construction. Bloomington, Illinois: McKnight and McKnight Publishing Co., 1970.

Wagner, Willis H. Modern Carpentry. Homewood, Illinois: Goodheart-Wilcox Co., Inc., 1969.

Masonry

(Example Unit)

# BUILD A FOUR-INCH CORNER LEAD—ALL-STRETCHER BOND

---

**Assignment Sheet** **Code No. I-7**

---

## OBJECTIVES:

1. To explain specific steps to be followed in squaring a corner.
2. To explain the use of a spacing rule in gaging height courses.
3. To explain the use of a mason's level in plumbing, straightedging, leveling, and aligning.
4. To explain proper procedure for picking up, spreading, and furring mortar.

## INTRODUCTORY INFORMATION:

Lead building is one of the most difficult skills to master in masonry. Therefore, those who are given this assignment usually are considered the top men on the job and are paid a little more than men who lay to the line.

## REFERENCES:

Ray, The Art of Bricklaying, pp. 52-72.
Dalzell and Townsend, Masonry Simplified, Vol. 1, 274-279.

**TOPICS FOR SPECIAL EMPHASIS:**

1. Gathering mortar from the side of the mortar pile
2. Gathering mortar from the middle of the mortar pile
3. Cutting mortar from the crest of the mortar pile
4. Riffling
5. Method of making sure the wall is straight
6. Striking

**PROBLEM ASSIGNMENT:**

1. Why is mortar sometimes gathered from the side of the pile?
2. What movement is necessary for the correct spreading of mortar when laying brick?
3. What is meant by the term "striking"?
4. What is riffling?
5. How can a mason determine if the wall is straight without the aid of any special tools?

# BUILD A FOUR-INCH CORNER LEAD––ALL-STRETCHER BOND

**Job Sheet** **Code No. I-7**

## OBJECTIVES:

To build a 4-inch, all-stretcher bond, corner lead which is nine courses high, using a ½ in. bed joint.

## INTRODUCTORY INFORMATION:

The correct laying of corner leads is essential for the successful erection of any masonry structure. The lead must be built as accurately as possible because the strength and attractiveness of the structure depend upon the accuracy of corner leads. Therefore, the lead must be built by a highly skilled mason who is interested in doing an excellent job.

## EQUIPMENT, TOOLS, AND SUPPLIES:

- Rule, 6-ft. folding
- Framing square
- Pencil
- Brick
- Mortar board
- Mortar
- Trowel
- Mason's level
- Plumb bob
- Jointer
- Brush

PROCEDURE:

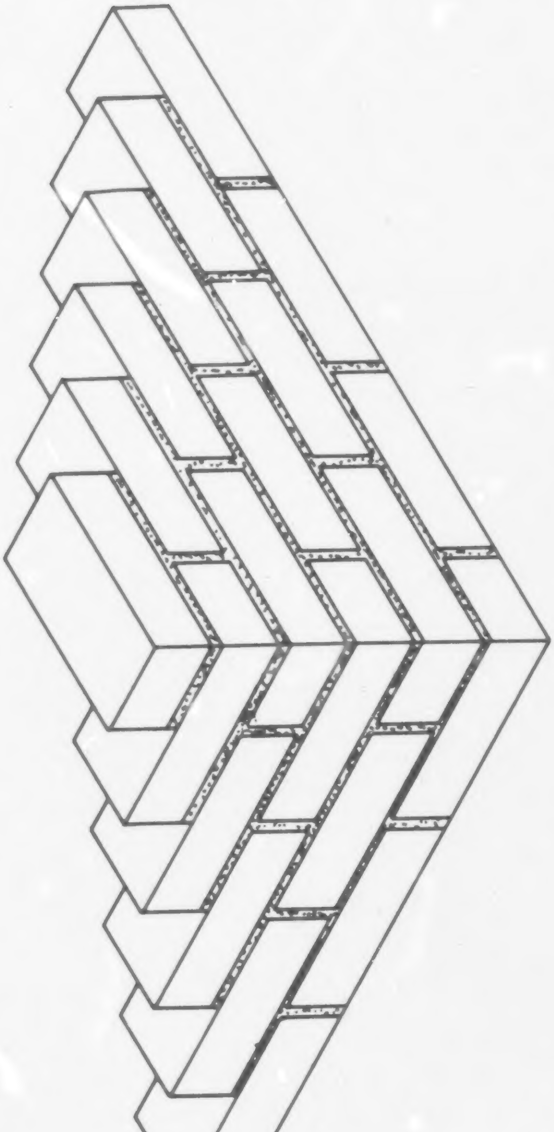
1. With the aid of the framing square, establish perpendicular lines approximately 48 inches long on the floor of your work area.
2. Lay out the corner dry by placing the corner brick at the intersection of the outlined corner and following with 4 bricks along this line. A space of about ½-inch should be left between the ends of each brick. This space is determined by placing the forefinger between the bricks as they are laid along the established line.
3. Using the same procedure, lay out the other side.
4. With materials and tools conveniently located, use the following procedure to lay the corner: (a) Pick up brick number 1, spread mortar, furrow, place brick on mortar, and level with leveling instrument; (b) Pick up brick number 2, spread mortar, furrow, place brick on mortar, and level brick; (c) Check to see that the course is level and straight; (d) Pick up brick number 3, spread mortar, furrow, place brick brick number 3 on bed, and level in relation to bricks number 1 and 2.
5. Remove the 3 dry-laid bricks on the other side of the corner, spread mortar, furrow, and lay bricks, using the method described in step number 4.
6. Check the corner for squareness, using a framing square.
7. Starting at the corner, lay the first and last bricks in the course while following the same procedure as described above. The framing square is not needed at this point in checking for squareness. Using the folding rule, check the work to make sure it meets specifications previously established by the architect or building code.
8. Complete the project by checking the corner for plumbness and the leads for alignment.
9. Joint the work, using the correct size jointing tool. Be sure the "head joints" are struck first.
10. Clean your project, work area, and tools; place unused materials in areas designated for this purpose.

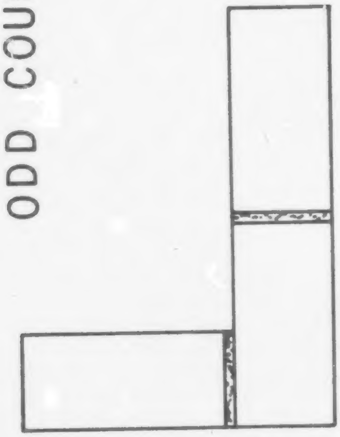
SEE DRAWING

**PROBLEM:**

Build a 4-inch corner lead. When you have finished the lead, describe briefly the operations which gave you the greatest problems.

I-7





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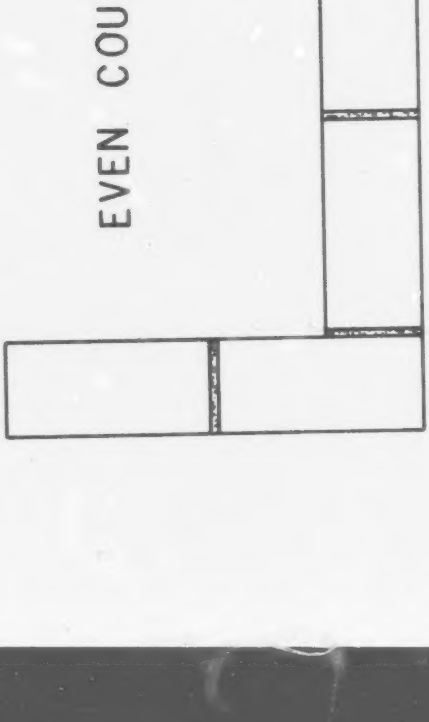

EVEN COURSE

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Laurel Brick and Tile Company. SCPI Brick Masonry Estimator. Laurel, Mississippi: Laurel Brick and Tile Company, Inc., 1971.

Electricity

(Example Unit)

# INSTALL SINGLE- AND THREE-POLE SWITCHES

---

Assignment Sheet Code No. I-13

---

## OBJECTIVES:

To explain proper installation of single- and three-pole switches.

## INTRODUCTORY INFORMATION:

The single-pole switch is the simplest method for the control of a circuit. It is used when only one side of the wire must be broken. This is not true of the three-pole switch. With a three-way, or three-pole switch, the circuit may be broken at two different locations. If a circuit is broken at two locations, an individual can control the light from two distant points.

## REFERENCES:

Graham, Interior Electric Wiring, pp. 58-72.
Jones and Johnston, Adequate Wiring for Home and Farm, pp. 69-73.
Mix and Pritchard, All About House Wiring, pp. 61-64.
Perry and Schaefebook, Fundamental Jobs in Electricity, pp. 160-163.
Sears, Roebuck and Co., Simplified Electric Wiring Handbook,
    pp. 24-25.

TOPICS FOR SPECIAL EMPHASIS:

1. Purpose of a single-pole switch
2. Disadvantage of single-pole switch
3. Location of single-pole switch
4. Advantage of three-pole switch
5. Location of three-pole switch
6. Purpose of three-way switch

PROBLEM ASSIGNMENT:

1. Draw a schematic or circuit layout of a single-pole switch hookup.
2. What are some of the disadvantages of installing a single-pole switch?
3. From how many points can a light be controlled with a three-way switch?
4. Which wire is usually considered a hot wire?
5. Draw a schematic or circuit layout of a three-way switch which controls two or more lights.

# INSTALL SINGLE- AND THREE-POLE SWITCHES

Job Sheet Code No. I-13

OBJECTIVES:

To install a single-pole and a three-pole switch.

INTRODUCTORY INFORMATION:

A single-pole switch is installed where a fixture is controlled from one point. Three-pole switches are used to control a fixture from two locations. They are often used, for example, to control a light from both the top and the bottom of a staircase.

EQUIPMENT, TOOLS, AND SUPPLIES:

- Single-pole switch
- Two 3-way switches
- Two junction boxes
- Three switch boxes and covers
- Two fixtures
- Wire
- Electrician's pliers
- Knife, or wire strippers
- Needle nose pliers
- Screwdriver
- Tape, or solderless fastener

PROCEDURE:

## SINGLE SWITCH

1. Run 2 wires from switch box to fixture box.
2. Run 2 wires from service panel to fixture box.
3. Connect black wires in fixture box and tape them. Then push black wires into back part of box.
4. Connect white wires to each side of fixture.
5. Connect white and black wire to each pole on switch.
6. Fasten switch in wall box.
7. Place cover over outlet switch and tighten screws.

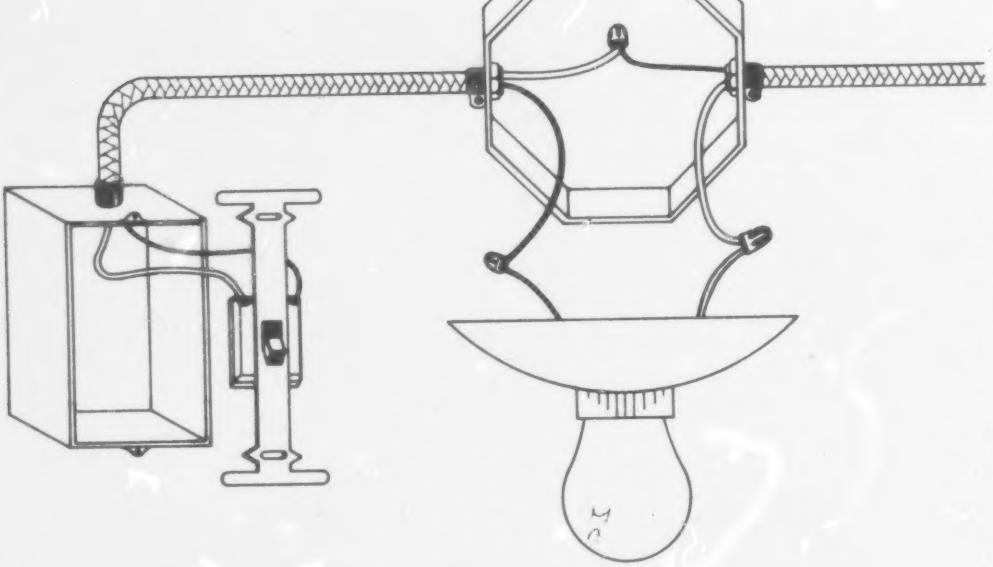
## THREE-WAY SWITCH

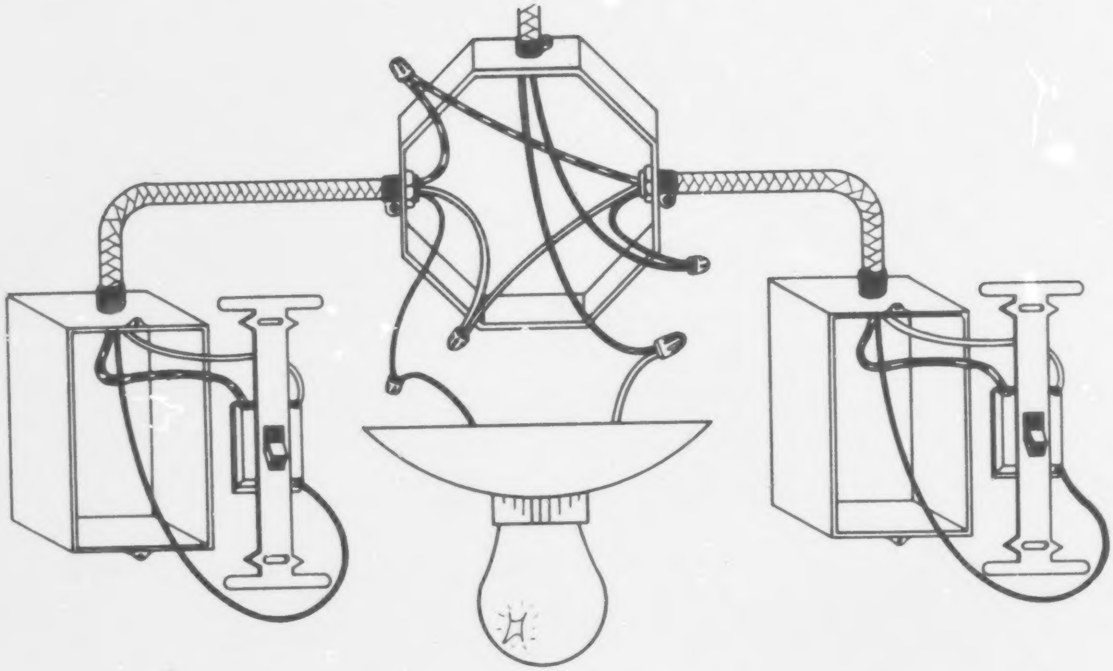
1. Run 3 pieces of 3-wire cable, one from service box to junction, and 2 from junction box to 3-way switch.
2. Tie red wires together and white wires together in junction or outlet box.
3. Connect red wire and white wire to terminals on the 3-way switch.
4. Connect black wire from number 2 switch to black source wire.
5. Connect black wire from number 1 switch to light fixture.
6. Connect white wire of service line to the opposite terminal on the fixture.
7. Fasten switch in wall box with screws.
8. Place cover over outlet switch and tighten screws.

SEE DRAWING

PROBLEM:

Using the supplies and materials listed, install a light which is controlled by a single-pole switch. When you have finished installing the single-pole switch, install a 3-way switch that will control a light from 2 different locations.





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Henderson, G. E. Maintaining the Home Lighting and Wiring System. Athens, Georgia: American Association for Vocational Instructional Materials, 1971.

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Sears Roebuck and Company. Simplified Electric Wiring Handbook. Memphis, Tennessee: Sears Roebuck and Co., 1964.

Plumbing

(Example Unit)

## INSTALL A COPPER WATER LINE

---

Assignment Sheet Code No. I-20

---

### OBJECTIVES:

To explain the proper installation of a copper water line.

### INTRODUCTORY INFORMATION:

A good sweat joint in copper pipe is quickly made and is water tight. However, skill in required to make a good joint. The local building code should be consulted before installing the lines because in many areas torches are not permitted inside the building (especially old structures).

### REFERENCES:

Matthias and Smith, How to Design and Install Plumbing, p. 49.
Oravetz, Audels Plumbers and Pipe Fitters Library; Installation, Heating, Welding, pp. 25-41.

TOPICS FOR
SPECIAL EMPHASIS:

1. Function of service line
2. Size of pipe to be used
3. Alternate type of pipe to be used
4. Advantages of laying pipe straight
5. Result if either pipe or fittings is not clean
6. Importance of having a non-leaking service line
7. Results if line leaks after installation

PROBLEM
ASSINGMENT:

1. List the advantages of sweat joints.
2. What are the two types of copper pipe used in a water system?
3. What size pipe should be used for a service line?
4. Why should the pipe be perfectly clean before attempting to sweat-solder?
5. Why should the line be constructed so that it will not leak?

# INSTALL A COPPER WATER LINE

---

Job Sheet Code No. I-20

---

## OBJECTIVES:

To install a copper water line from the city service to the building using sweat joints.

## INTRODUCTORY INFORMATION:

Sweat joints can be made more quickly than threaded ones. If a sweat joint is properly made, it will withstand greater pressure than a joint held together with threads.

## EQUIPMENT, TOOLS, AND SUPPLIES:

Solder, 50-50
Non-acid flux
Sandpaper, steel wool, or
    steel brush
Copper pipe, ¾-in.
Assorted copper fittings, ¾-in.
Soldering torch
Hacksaw
Pipe reamer
Pipe wrench, 10 in.
Pipe dope

## PROCEDURE:

1. Clean the outside of the end of the copper pipe using sandpaper or steel wool. Clean approximately 1 inch of the pipe.
2. Clean the inside of a ¾-in. male adaptor.
3. Put pipe dope on male threads of adaptor and with 10-in. wrench, screw it into meter outlet.
4. Put solder flux on end of copper pipe and put copper pipe into adaptor.
5. With soldering torch heat both the end of the pipe and the adaptor.
6. Touch the end of wire solder directly to the surface of the pipe close to the adaptor (or to the solder holes in the adaptor, if available) until the solder flows into the adaptor. Be sure it goes completely around the pipe and fitting.
7. Cut pipe the length desired with a hacksaw and take pipe reamer and remove the burrs on inside of pipe.
8. For first opening on service line use the cleaning procedures listed above, and clean and solder a copper tee to the line.

## PROBLEM:

1. Write in detail the steps involved in making a sweat joint.
2. What type solder is used?

## References

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# INDUSTRIAL DRAFTING

# INDUSTRIAL DRAFTING

## A TEACHER'S OUTLINE FOR USE IN ORGANIZATION AND MANAGEMENT OF INSTRUCTION

Published by
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CURRICULUM COORDINATING UNIT
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## HOW TO USE THIS PUBLICATION

1. Note major sections in the TABLE OF CONTENTS; read and study carefully the entire guide.

2. Begin a shop library, using the BIBLIOGRAPHY.

3. Adapt, (with the help of an advisory committee) course content to your local situation by sequencing, add, and/or delete suitable jobs and related information.

4. Make and post a progress chart (see APPENDIX for example).

5. Plan well-in-advance what to teach. Choose the job from the right hand column of the COURSE OF STUDY. Develop instruction sheets (see APPENDIX for samples). Do not attempt to teach directly from this course of study.

   5a. Select several references from the shop library.

   5b. Prepare a lesson plan from which to present the trade principles that apply to the trade practice (job), and/or demonstrate the performance of the job. These principles are found in the course content opposite the job.

   5c. Prepare an assignment sheet which covers the information, in the text or references, to be taught in the lesson presentation.

   5d. Prepare a job sheet which explains what is to be done.

   5e. Prepare operation sheets which explain how to do those steps in completing the job with which the student is not familiar.

   5f. Prepare information sheets if the student needs additional, clarifying information to complete the job.

6. Acquire or prepare visual aids called for an instruction sheets.

7. Make assignments with assignment sheets prior to presenting the lesson. After the lesson information has been presented and/or the demonstration completed, pass out the appropriate job sheet and the necessary operation and information sheets.

8. Assign jobs only after fully teaching principles necessary for safety and efficient completion of the job. Some students will not progress as rapidly as others and will need more attention and time.

9. Evaluate student's progress (as shown on the sample instruction sheets). Mark each student's progress, and give a new assignment.

## TABLE OF CONTENTS

### INTRODUCTION

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### COURSE OF STUDY

Description of the Vocational Industrial Draftsman....

*Course Description....................................

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        *II. Machine Drafting......................

    Second Year

        III. Advanced Machine Drafting..............

        IV. Architectural Drafting..................

Bibliography: recommended text and suggested references..............................

### APPENDIX

Suggested Jobs.........................................

Progress Chart.........................................

Operations Analysis....................................

Legend.................................................

Layout.................................................

Supplies...............................................

*Shown in this section

Instructional Sheets (Examples)
  Lesson Plan...............................
  Job Sheet.................................
  Operation Sheet...........................
  Information Sheet.........................
  Assignment Sheet..........................

# COURSE DESCRIPTION

## GENERAL OBJECTIVE

To assist the trainee in developing knowledge and skills for employment as a draftsman on an advanced learner's level.

## ASSUMPTIONS

1. That those enrolling in training have had no previous experience in drafting
2. That trainees have a vocational commitment to drafting
3. That a guidance and screening process has determined that those enrolled possess aptitudes in the perception of spacial relationships and in the manipulation of drafting instruments

## DESIRABLE PREREQUISITES

1. Command of arithmetic fundamentals
2. One year of algebra and one semester of plane geometry

## NATURE OF TRAINING

1. The duration of training is normally three hours per day, five days per week, thirty-six weeks per year for two nine-month periods; or six hours per day, five days per week, thirty-six weeks per year for one nine-month period - a total of 1080 clock hours of training

2. Related instruction by lecture, demonstration, the use of audiovisuals, etc. immediately precedes application by the trainees in the drafting room; instruction and its application are correlated as closely as possible at all times; and the major allotment of time is given to the development of manipulative skills in the representation of drafting details.

3. No instruction directly related to the trade is offered outside the drafting room.

## LEVELS OF KNOWLEDGE

1. A thorough knowledge of the types of drafting equipment and reproduction media used in industry

2. Command of the fundamentals of geometric construction

3. Command of the fundamentals of such areas as orthographic

projection, pictorial drawing, multiview drawing, sectioning, dimensioning, and working drawings

4. A general knowledge of the conventional types of lettering

5. A high degree of visualization

6. Knowledge appropriate to the entry-level draftsman in the selected area of specialty; i.e., architectural, or machine

LEVELS OF SKILLS

1. Full use of drafting instruments

2. Ability to produce quality line work

3. Ability to adapt drafting fundamentals in areas of specialty

4. High ability to letter vertical and inclined Gothic, upper and lower case

5. Basic skills in using certain modern reproduction machines

## INSTRUCTIONAL BLOCKS

Each of the following instructional blocks carries a contact hour allotment. These allotments indicate relative emphasis and are not to be strictly adhered to.

| | | Contact Hours |
|---|---|---|
| I. | Fundamentals of Drafting | 370 |
| II. | Machine Drafting | 170 |
| III. | Advanced Machine Drafting* | 190 |
| IV. | Architectural Drafting* | 350 |

*During the 540 hours allotted the second year, the learner is faced with two alternatives-either to gain an understanding of the two areas starred above, or to elect a specialty and develop a significant level of proficiency.

Machine Drafting is to be taught in two sections. The first section should contain 170 contact hours. Advanced Machine Drafting should start with "Working Drawings," or at the point of completion during the first year. Advanced Machine Drafting includes 130 contact hours of machine drafting and 60 contact hours of sheet metal drafting.

## II. MACHINE DRAFTING
*(Contact hours 170)*

| *Trade principles* | *Trade practices* |
|---|---|
| A. Purpose | |
| B. Explanation of large and small industry | Make a study of machines of industry and uses. Use visual aids for familiarization. |
| 1. Types of large and small industry | |
| 2. Organization | |
| 3. Equipment variation | |
| C. Raw materials | Bring samples of raw stock and demonstrate various characteristics. |
| 1. Types of raw materials commonly used | |
| a. Shapes and sizes | |
| (1) Sheet | |
| (2) Plate | |
| (3) Flat | |
| (4) Square | |
| (5) Round | |
| (6) Hexagon | |
| (7) Octagon | |
| (8) Angle | |
| (9) Channel | |
| (10) Tee | |
| (11) I-Beam | |
| b. Types of raw stock | |

(1) Steel
    (a) Low-carbon
    (b) Medium-carbon
    (c) High-carbon
    (d) Special alloy
    (e) High-speed carbon
    (f) Cold rolled
    (g) Hot rolled
    (h) Cold drawn
    (i) Cast
(2) Steel alloys
    (a) Nickel
    (b) Chromium
    (c) Manganese
    (d) Molybdenum
    (e) Tungsten
    (f) Vanadium
(3) Nonferrous metals
    (a) Aluminum
    (b) Copper
    (c) Brass
    (d) Bronze
    (e) Zinc
    (f) Silver
    (g) Gold

        - (h) Magnesium
        - (i) Lead
        - (j) Tin
        - (k) Babbitt
        - (l) Pewter
        - (m) Nickel

    2. Physical characteristics of raw materials
        - a. Relationship to draftsman
        - b. Relationship to shop processes
        - c. Relationship to finished product
    3. Modification by shop processes

D. Related vocabulary

1. Metal thickness (gages)
2. Punches
3. Dies
4. Gears
5. Template cutter
6. Gaskets
7. Bushing
8. Bearing
9. Cast iron
10. Cam
11. Ream
12. Bore
13. Counter bore

14. Fillets and rounds

15. Chamfer

16. Rib

17. Knurling

18. Spot face

19. Countersink

20. Broach

21. Web

22. Spoke

E. Manufacturing methods and the drawing

Bring sample manufactured objects and parts, and carefully study. Assign principal view drawings of these parts and objects. Draw complete with dimensions.

   1. Casting and the drawing
      a. Sand casting
      b. Permanent mold casting
      c. Die casting
      d. Fillets and rounds
      e. Patterns for casting
      f. Castings and the foundry
      g. Allowances for shrinkage

Assign basic pattern drawings that could be used by the pattern department to construct patterns for use by the foundry. Include notes, dimensions, and finish marks.

   2. Machine tools and the drawing
      a. Engine lathe
         (1) Description
         (2) Operations performed and drawing representation
      b. Drill press
         (1) Types

Develop a series of working drawings illustrating the basic operations to be performed on objects and parts with an engine lathe, drill press, and milling machine. Show all dimensions

- (2) Description
- (3) Operations performed and drawing representation

c. Milling machines

- (1) Types
- (2) Description
- (3) Operations performed and drawing representation

d. Shapers

- (1) Types
- (2) Description
- (3) Operations performed and drawing representation

Develop a series of working drawings illustrating the basic operations to be performed on objects and parts with a shaper, planer, and grinder. Show all dimensions.

e. Planer

- (1) Description
- (2) Examples of planer work

Assign a semi-complex working drawing representing several of the above operations to be performed on one object or part. Include notes, finish marks, and all dimensions.

f. Grinder

- (1) Types
- (2) Description
- (3) Operations performed and drawing representation

g. Measuring tools

- (1) Semiprecision measuring tools(linear measurements)
  - (a) Rules

Examine measuring tools

(b) Calipers(inside and outside)

(c) Squares

(d) Protractor

(2) Precision measuring tools(linear measurements)

(a) Vernied height gage

(b) Vernier caliper

(c) Dial indicators gage

(d) Telescope gage

(e) Depth gage

3. Welds,welding process, and the drawing

Stress the usefulness and importance of welding representation in drawing by visiting a shop that uses draftsmen and their work to make a finished product

a. Welding processes

(1) Gas welding

(2) Electric-resistance

(3) Electric-arc welding

(4) Atomic hydrogen welding

(5) Forge welding

(6) Oxygen cutting and flame machining

(7) Thermit welding

b. Bonding processes

(1) Brazing

(2) Soldering

| | |
|---|---|
| c. Types of welded joints and their symbols | Make cross-sectional sketches of welded joints, and label. Practice drawing various joint symbols. |
| (1) Butt joint | |
| (2) Lap joint | |
| (3) Tee joint | |
| (4) Corner joint | |
| (5) Edge joint | |
| d. Welding symbol drawing | Differentiate between resistance, arc, gas, and supplementary welding symbols. |
| (1) Individual basic symbols | |
| (2) Complete welding symbols | |
| (3) Standard locations | Begin by drawing basic individual symbols. Progress to complete welding symbols. |
| (4) Notes | |
| (5) Lettering in symbols | |
| e. Types of welds and their symbols | |
| (1) Arc and gas welds | |
| (a) Bead | |
| (b) Fillet | |
| (c) Plug or slot | |
| (d) Groove | |
| (2) Resistance welds | Develop a series of working drawings of machine parts and objects, and steel structures that require welding processes. Show adequate welding representation. |
| (a) Spot welds | |
| (b) Projection welds | |
| (c) Flash or upset welds | |

| | |
|---|---|
| (d) Butt-seam welds | |
| (e) Lap-seam welds | |
| (3) Supplementary welds | |
| 4. Forming processes and the drawing (sheet stock) | Prepare drawings that represent the shape, tolerances, etc. of objects the press man must have to select dies for forming |
| a. Types of presses | |
| b. Classification of dies | |
| c. Classification of operations | |
| 5. Forging processes and the drawing | Prepare drawings that may be used by the forging department to make desired objects. Include the shape of the finished forging in full outline. Show the parting line and draft. |
| a. Drop forging | |
| (1) Explanation of hammer and dies | |
| (2) Heat treatment | |
| b. Press forging | |
| (1) Purpose | |
| (2) Operations | |
| c. Machine or upset forging | |
| d. Explanation of cold forging operations | |
| 6. Fasteners | |
| a. Rivets | Assign problems that give experience in the methods of representing common riveted joints, rivet types and sizes, and conventional rivet symbols. |
| (1) Uses | |
| (2) Size classification | |
| (3) Types of joints | |
| (4) Representation | |

b. Threads

(1) History

(2) Thread terms

(3) Thread uses

(4) Standardization of threads

(5) Thread forms

(6) Detailed thread representation

(7) Thread symbols

   (a) Schematic

   (b) Simplified

(8) Single and multiple threads

(9) American national thread series

(10) Unified screw threads

(11) Classes of fit and thread notes

(12) Dimensioning

Demonstrate why the true projection of a screw thread is not practical. Assign problems involving representation of the various forms of screws and threads, classes of fit, and notes complete with dimensions. Special attention should be given the use of instruments.

c. Springs

(1) Classification

   (a) Helical type (compression, extension,torsion)

   (b) Flat type

(2) Detailed drawing method

(3) Schematic drawing method

Compare springs to screw threads for clarity. Assign a series of problems involving the three helical types of springs using the detailed and schematic approaches. Select one problem that involves sectioning.

| | |
|---|---|
| (4) Sectioning | |
| (5) Dimensioning | |
| d. Bolts and nuts | Assign a series of problems in drawing bolts and nuts. Begin by laying out the major diameter, axis, and length of the bolt. Using the formulas, complete the drawings. Include all details and specifications. |
| (1) Bolt series | |
| (a) Regular | |
| (b) Heavy | |
| (c) Light | |
| (2) Finish | |
| (a) Finished | |
| (b) Semifinished | |
| (c) Unfinished | |
| (3) Classes of fit(threads) | |
| (4) Drawing bolts and nuts | Continue practice in drawing bolts and nuts by application to detail and assembly drawings. |
| (a) Formulas for drawing | |
| (b) Specification to be included on the drawing | |
| (5) Locknuts and locking devices | Make a careful study of the various locknuts, locking devices, and stud bolts with particular attention to their use in working drawings. Use visual aids for familiarization. |
| (6) Stud bolts | |
| e. Screws | |
| (1) Cap screws and machine screws | Make one-view and two-view drawings of cap screws, machine screws, and set screws. Show all specifications and dimensions. |
| (a) Types | |
| (b) Drawing | |
| (c) Specification to be included in drawing | |

| | |
|---|---|
| (2) Set screws | |
| (a) Types | |
| (b) Drawing<br>(c) Specification to be included in drawing | Continue practice in drawing screws by application to detail and assembly drawings. |
| f. Machine pins and keyways<br>(1) Types<br>(2) Drawing methods | Make a study of the various machine pins and keys. Practice drawing machine pins and keyways in detail, and assembly drawings of collars, gears, shafts, etc. |

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Goodheart-Willcox Company, Inc.
18250 Harwood
Homewood, Illinois 60403

# INDUSTRIAL WIRING

Industrial Wiring

# STUDY GUIDE

for

# ELECTRICAL CONSTRUCTION WIRING

Prepared by
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Based on the Textbook
ELECTRICAL CONSTRUCTION WIRING
First Edition
by Walter N. Alerich

American Technical Society
Chicago, Illinois  60637

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# ELECTRICAL CONSTRUCTION WIRING

## How to Profit Most from This Subject

This Study Guide has been designed to help you through each assignment so you will gain as much as possible from this subject. Generally the study assignments are short; educational experiments have proved that you can learn more--and learn it more easily--by studying a series of short assignments rather than one long one. This subject has 29 assignments and 12 examinations.

Use the Study Guide in the following way.

### Step 1: READ THE DISCUSSION

The Discussion is your instructor's explanation of the material covered by each Study Assignment. Read the Discussion first because it will indicate the most important points presented in that assignment.

### Step 2: READ THE STUDY ASSIGNMENT

Each Study Assignment tells you the pages to read in your textbook. As you read the study assignment, pay particular attention to the points mentioned in the Discussion.

### Step 3: TAKE THE SELF-CHECK TEST

Self-Check Tests are short quizzes which you can complete quickly. They will question you on the most important parts of the study assignment you have just read. They are valuable aids in helping you remember what you have read.

### Step 4: SCORE YOURSELF

The answers to the Self-Check Test questions are found in the Answer Key at the back of this Study Guide. Checking your own Self-Check Test will help you see how much you have learned and what you need to restudy. Page references are given after each Self-Check Test item so you can immediately turn to that page and restudy any item you might have missed. Restudying an item you answered incorrectly will help you remember it for the examination. Self-Check Tests serve as an excellent review for the examinations so it is a good idea to review them before you begin each examination.

Step 5: TAKE THE MEMORY JOGGER

Memory joggers are review quizzes covering several study assignments. They are designed to help you review what you have studied to that point. When you have answered all the memory jogger questions, score yourself. The answers are in the back of this Study Guide.

Step 6: TAKE THE EXAMINATION

Each examination will test you on a section of the textbook covering one or more study assignments. The examinations will show you how much progress you have made in your studies.

On the next page you will find examples of the types of questions asked on examinations. Look at them carefully; these directions will be given once and will not be repeated.

Directions for answering examination questions.

### Example of Combination-Type Question

If the statement is correct, write "C" in the parentheses as shown in question 1. If the statement is incorrect, write "I" in the parentheses AND fill in the blank space with the word(s) which, if substituted for the underlined word(s), would make the statement correct as shown in question 2.

1. (c) The loop or winding of a transformer that is connected to the supply wires is called the primary.

2. (I) primary The loop or winding of a transformer that is connected to the supply wires is called the secondary.

### Example of Multiple-Choice Question

You are given three or four choices to make a complete and correct statement. In the blank space before each statement, write the letter of the best choice.

3. B The specific gravity of the fully charged battery is
(A) 1.280 (B) 1.250 (C) 1.150.

### Example of Completion-Type Question

4. repel The north pole of a bar magnet will
X a north pole of another magnet.

On the blank line(s) at the left, write the word(s) that complete the statement correctly.

Where other types of questions appear, directions for them are given.

(Example Unit)

## ELECTRICAL CONSTRUCTION WIRING

### DISCUSSION 21: Methods of Conduit Wiring

A good portion of this assignment is devoted to discussing the bending of rigid conduit. Because it is often difficult to predetermine results when bending conduit, working with conduit has been a problem for the apprentice, for helpers, and for some journeymen. Guesswork often results in many feet of wasted conduit which increases the cost of a job or results in a very unsightly appearance if poorly bent conduit is used.

The purpose of this assignment is to give the man working with conduit an exact working knowledge of methods of conduit bending in order to eliminate guesswork and, therefore, to avoid common costly errors.

STUDY ASSIGNMENT 21: Read pages 320 to 340 in your textbook, then answer the following questions.

### SELF-CHECK TEST 21

1. ( ) ______________ General purpose, metallic conduit is made of either iron or aluminum. (page 320, textbook)

2. ( ) ______________ Electrical metallic tubing is usually referred to as thin-wall conduit. (page 321)

3. ( ) ______________ Rigid conduit, when plated with zinc, is termed enameled conduit. (page 321)

4. ( ) ______________ Rigid conduit comes from the manufacturer in 16 foot lengths. (page 321)

5. ( ) ______________ The largest obtainable size of thin-wall conduit is 4 inches. (page 323)

6. ( ) ______________ Greenfield is flexible metallic conduit. (page 323)

7. ( ) ______________ Conduit ells are standard only for 45 degree bends. (page 331)

8. ( ) ______________ Conduit ells of longer radii than the standard type are called sweeps. (page 332)

9. ( ) ________________ The NEC requires a locknut inside and outside an outlet box when the voltage to ground exceeds 120 volts. (page 333)

10. ( ) ________________ Rigid conduit is usually cut with a hacksaw blade having 26 to 30 teeth per inch. (page 336)

(End of Quiz)

DISCUSSION 22: Methods of Conduit Wiring - Continued

This assignment is going to cover the bending of EMT or thin-wall conduit, among other things. There are several restrictions that should be observed or noted regarding this type of conduit, and they should be studied before getting into the actual bending operations. Thin-wall conduit should not be used:

1. in hazardous locations,
2. where it will be subject to severe mechanical injury during or after installation,
3. where exposed to any type of corrosive vapors,
4. unless it is at least 18 inches under the fill.

If you have any question as to where thin-wall conduit can or cannot be installed, consult the National Electrical Code.

STUDY ASSIGNMENT 22: Read pages 340 to 357 in your textbook, then answer the following questions.

SELF-CHECK TEST 22

1. ( ) ________________ Roll type benders are generally used for bending thin-wall conduit. (page 340, textbook)

2. ( ) ________________ When running EMT, the boring of studs and timbers should be resorted to only where absolutely necessary. (page 346)

3. ( ) ________________ Hacksaw blades used for cutting thin-wall conduit should have 18 to 24 teeth per inch. (page 346)

4. ( ) ________________ Setscrew type couplings are not considered to be watertight. (page 348)

5. ( ) ________________ The process of mounting outlet boxes is called boxing. (page 351)

6. ( ) ________________ Convenience outlets are usually mounted 16 inches above the floor. (page 351)

7. ( ) ________________ The NEC requires that flex be supported at intervals not exceeding 4 1/2 feet on a run. (page 354)

(End of Quiz)

DISCUSSION 23: Methods of Conduit Wiring - Continued

When a new home is to be wired, the owner must decide first on the type of wiring system he wishes to have installed. If his home is located on a farm, he will probably decide on nonmetallic sheathed cable because it is inexpensive and easy to install. If his home is located in a large city, he will have to comply with the regulations set up by the local authorities. Many of the large cities have regulations that prohibit the use of any form of wiring other than conduit or armored cable. Of the two, conduit is the more expensive but it also eliminates, almost entirely, the danger of fires. This should be an important consideration for all prospective home owners.

In Study Assignment 23 is a thorough description of all the material and tools needed to install a first class conduit job. Study this material carefully because this knowledge will be an important part of your background. From a practical standpoint, this assignment is very important. To remember the various methods of application is a difficult task, but this assignment can be used as a reference once you have become familiar with its contents.

STUDY ASSIGNMENT 23: Read pages 358-379 in your textbook, then answer the following questions.

SELF-CHECK TEST 23

1. ( ) ________________ If more than one toggle bolt is used to hold a device, each must be inserted into its hole before the first one is located. (pages 358-359, textbook)

2. ( ) ________________ Expansion anchors are used to mount devices on dense surfaces such as concrete ________________ walls. (page 359)

3. ( ) ________________ Wood screws are used in plugs that are made of jute. (page 359)

4. ( ) ________________ Sheet metal or wood screws can be used with plastic plug type anchors. (page 360)

5. ( ) ________________ Holes to accommodate anchors are commonly drilled in masonry with a carbon tipped drill bit. (page 362)

6. ( ) ________________ Impact power hammers cannot be used with self-drilling anchors. (page 363)

7. ( ) ________________ Power actuated fasteners can penetrate up to one inch of steel. (page 366)

8. ( ) ________________ Power driven fasteners should not be used or fired into concrete that is less than 6 inches thick. (page 366)

9. ( ) ________________ In the trade, a through-the-wall box is called a blind box. (page 367)

10. ( ) ________________ The number of wires (No. 14) that can be installed in 3/4-inch conduit is five. (page 372)

11. ( ) ________________ Generally, the maximum number of conduit bends between any two outlet boxes should not exceed the equivalent of two 90 degree bends. (page 373)

12. ( ) ________________ The tempered flexible steel wire used for pulling wire into conduit is called fish tape. (page 373)

13. ( ) ________________ If conductors tend to stick, they may be coated with soapstone to lubricate them as they enter the conduit. (page 376)

(End of Quiz)

# EXAMINATION 9

ELECTRICAL CONSTRUCTION WIRING

TOPIC: Methods of Conduit Wiring

Based on pages 320-379 in your textbook

Student's Name____________________ Student Number____________________

Street________________ City____________ State____________ Zip Code_________

1. There are three general types of metallic conduit in use today. Name them.

   A. ______________________________

   B. ______________________________

   C. ______________________________

2. _____ General purpose metallic conduit is made either of (A) iron or aluminum (B) steel or aluminum (C) iron or steel.

3. _____ Rigid conduit, when plated with zinc, is termed (A) enameled conduit (B) waterproof conduit (C) galvanized conduit.

4. _____ Conduit whose inside and outside diameters have the same dimensions as those of standard pipe is called (A) EMT (B) Greenfield (C) rigid conduit.

5. _____ The wall thickness of EMT is only about (A) 40 percent of that of rigid conduit (B) 60 percent of that of Greenfield (C) 70 percent of that of rigid conduit and is never threaded.

6. _____ Instead of standard ells, bends of longer radii are also used and are commonly called (A) fillets (B) tangs (C) sweeps.

7. _____ No conduit elbow should be bent to a shorter radius than (A) three times the inside diameter of the conduit (B) six times the inside diameter of the conduit (C) four times the inside diameter of the conduit.

(over)

8. _____ The blade that is used in a hacksaw to cut rigid conduit should have (A) 18 to 24 teeth per inch (B) 24 to 32 teeth per inch (C) 10 to 15 teeth per inch.

9. _____ The NEC requires a locknut inside and outside an outlet box when the voltage to ground exceeds (A) 250 volts (B) 125 volts (C) 110 volts.

10. _____ Roll-type benders are generally used for bending (A) rigid conduit (B) thin-wall conduit (C) flexible conduit.

11. _____ Hacksaw blades used for cutting thin-wall conduit should have (A) 24 to 32 teeth per inch (B) 18 to 24 per inch (C) 12 to 16 teeth per inch.

12. _____ Convenience outlets are usually mounted (A) 16 inches above the floor (B) 8 inches above the floor (C) 12 inches above the floor.

13. _____ The largest obtainable size of EMT is (A) 2 inches (B) 4 inches (C) 1 1/4 inches.

14. _____ Wood screws are used in plugs that are made of (A) copper (B) lead (C) jute.

15. _____ Anchor holes are commonly drilled in masonry with (A) carbon tipped drill bits (B) stainless steel drill bits (C) carbide tipped drill bits.

16. _____ Power actuated fasteners can penetrate up to (A) three inches of steel (B) ten inches of concrete (C) one inch of steel.

ELECTRICAL CONSTRUCTION WIRING

Student's Name____________________Student Number___________________

DIRECTIONS: The following items are all used by electricians doing conduit wiring. Write the correct name for each item on the blank line below each illustration.

17.___________________________ 18.___________________________

19.___________________________ 20.___________________________

(End of Examination)

# References

Alerich, Walter N. Electrical Construction Wiring. Chicago, Illinois: American Technical Society.

Marcus, Abraham. Basic Electricity. Englewood Cliffs, New Jersey: Prentice Hall, 1969.

Sears Roebuck and Company. Understanding Electricity and Electrical Terms, Their Meaning and Use. Memphis, Tennessee: Sears Roebuck and Company.

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# INTENSIVE BUSINESS TRAINING

# CURRICULUM GUIDE
# FOR
# VOCATIONAL TEACHER-COORDINATORS
# OF
# INTENSIVE BUSINESS TRAINING

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# INTRODUCTION

Due to the numerous changes taking place in businesses and offices today, it is obvious that a new program of office education is needed to provide the trained manpower required to meet the needs brought about by these changes. Office education is designed to serve these needs through initial, refresher, and expanded education.

The Intensive Business Training curriculum systems design specifies that each learning activity must relate logically to all other activities and must lead to the attainment of social, personal, and career needs as well as the intellectual needs of young people. A curriculum plan of this nature would provide a great flexibility for the student. If the student leaves school before graduation, he would leave with useful entry level job skills that would permit him to enter the job market. If he continues on to graduate from the program, he would have the skills and qualifications to go into the working force at that time, or continue his education in college or vocational school.

Intensive Business Training utilizes a block system, which may be described as a system of scheduling vocational office education students into a program of instruction covering two or three consecutive class periods of the day, with the same teacher being responsible for all of the instruction in the block of time.

Instead of teaching isolated units of study, a combination of subjects is offered, selected from typewriting, shorthand dictation, transcription, business letter writing, spelling, business arithmetic, introduction to data processing and keypunch, office procedures, accounting, office machines, filing, payroll procedures, human relations, graphic arts, consumer economics, etc.

The teacher has great latitude in determining how to utilize the block of time. The number of periods to be devoted to each of the subjects is determined according to the amount of time needed to develop the desired level of competency in each of the subjects included. The teacher may decide that a week of instruction using the entire block of time is needed for typewriting instruction; the next week the teacher may decide that one period a day will be devoted to transcription, the next period to business letter writing, etc. The teacher might organize the block so that all clerical students would be working on one unit of instruction, while the secretarial students would be working on some other unit. In other instances, such as when students are working on integrated office projects or practice sets, each student might be working on a different project, such as would be the case in actual office situations. In other words, the block of time offers infinite flexibility within the instructional program.

Basic textbooks[1] and supplementary materials are needed according to the subjects included in the block. The Intensive Business Training classroom should be equipped with the type of office equipment being used currently in business offices.

---

[1] Peter L. Agnew, James R. Meehan, and William R. Pasewark, CLERICAL OFFICE PRACTICE (4th ed.; New York: South-Western Publishing Company, 1966);

Albert C. Fries, Margaret Rowe, and Dorothy L. Travis, APPLIED SECRETARIAL PRACTICE (6th ed.; New York: McGraw-Hill Book Company, 1968).

# DESCRIPTION & OBJECTIVES OF INTENSIVE BUSINESS TRAINING*

## Description

Intensive Business Training in Mississippi is designed to prepare students for immediate employment in secretarial and clerical jobs in a business office. It includes the learning and mastering of office procedures and techniques. It is designed generally along the same learning channels of clerical office practice with emphasis placed on depth and practice of putting basic office skills into vocational experiences and practice. The block of time (two or three consecutive class periods) offers additional laboratory time to develop depth training in skills and enables the teacher-coordinator to integrate the course content to produce a qualified office worker.

Intensive Business Training fuses and correlates related office skills and knowledge. Prior approval must be obtained from the State Department of Education before initiating the Intensive Business Training class.

## Objectives

### *General*

1. The student will learn and master office duties.
2. The student will relate classroom activities to office situations.
3. The student will develop the ability to perform varied types of office work with accuracy and speed.
4. The student will develop desirable personal qualities and business ethics.
5. The student will develop office techniques necessary for employment and advancement on the job.

### *Specific*

1. The student will learn to identify the clerical office worker and his job opportunities.
2. The student will refresh once-learned understandings and skills.
3. The student will learn and master office duties and related skills, such as handling the mail, receiving callers, filing, duplicating, communications, machine transcription, office machines, record keeping, and automation.
4. The student will become acquainted with uses, mechanics, and care of office supplies and equipment.

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*State Department of Education, BUSINESS EDUCATION FOR MISSISSIPPI HIGH SCHOOLS, Mississippi School Bulletin, No. 157 (Jackson, Mississippi: State Department of Education, 1969).

5. The student will learn the importance of being able to take and follow oral and written instructions.

6. The student will learn the value of pleasing manners; of neat, business-like appearance; and of socially valuable attitudes.

7. The student will become familiar with occupational information through job application, personal data sheet, and interview.

### Course Content

Content of Intensive Business Training is a combination or sequence of subjects and projects designed by the local teacher-coordinator with the assistance of a local advisory committee. It is dealt with in depth so that the students may prepare themselves to meet the occupational demands in a local area. Thus, only a suggested course content and allotment of time is given in the following pages.

It is suggested that integrated office projects be used extensively throughout the course and that a full scale simulation be used at least once during the year.

A civil service training guide is used in most of the programs in existence at this time in Mississippi in an effort to prepare the student for taking the civil service examination at the end of the course, or prior to taking a job. This manual is used as supplementary material in conjunction with each of the units. The sample tests are excellent practice material for the student preparing to take the civil service test or any business test. The local civil service representative will, in most instances, arrange to come to the classroom and administer the civil service examination.

## CURRICULUM SYNOPSES

| D. O. T. NO. | JOB TITLE | Communications | Duplic. Processes | Graphic Arts | Human Relations | Int. to Data Proc. | Job Orientation | Office Machines | Office Simulation | Office Typewriting | Exec. Typewriter | Consumer Eco. | Records Mgt. | C. Record Keeping | Reference Act. | Shorthand Trans. | Travel & Transp. | Mach. Transcript. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 210.388 | Bookkeeper | x |  |  | * | x | x | x | * | x |  | x | x | x |  |  |  |  |
| 211.368 | Cashier | x |  |  |  | * | x | x | * |  |  | x |  | x |  |  |  |  |
| 215.388 | Bookkeeping Mach. Op. | x |  |  | * | x | x | x | * | x |  | x |  | x |  |  |  |  |
| 215.488 | Payroll Clerk | x |  |  | * | * | x | x | * | x |  | x | x | x |  |  |  |  |
| 216.488 | Calculating Mach. Op. | x |  |  | * | x | x | x | * | x |  | x |  | x |  |  |  |  |
| 212.368 | Teller | x |  |  | x | * | x | x | * |  |  | x |  | x |  |  |  |  |
| 207.782 | Duplicating Mach. Op. | x | x | x | * |  | x |  | * |  |  | x |  |  |  |  |  |  |
| 206.388 | File Clerk | x |  |  | x | x | x |  | * | x |  | x | x | x | x |  |  |  |
| 219.388 | Billing Clerk | x |  |  | * | x | x | x | * | x |  | x |  | x |  |  |  |  |
| 219.388 | General Office Clerk | x | x |  | * | x | x | x | * | x |  | x | x | x | x |  |  |  |
| 219.388 | Insurance Clerk | x |  |  | * | x | x | x | * | x |  | x | x | x |  |  |  |  |
| 219.388 | Statistical Clerk | x | x |  | * | * | x | x | * | x |  | x | x | x |  |  |  |  |
| 219.488 | Accounting Clerk | x |  |  | * | x | x | x | * | x |  | x | x | x |  |  |  |  |
| 204.288 | Correspondence Clerk | x | * |  | x | * | x | x | * | x |  | x | x |  | x |  | x |  |
| 231.588 | Mail Clerk | x |  |  | * | * | x |  | * |  |  | x | x |  | x |  | x |  |
| 340.878 | Messenger | x | x |  | x | * | x |  | * |  |  | x | x |  |  |  |  |  |
| 237.368 | Receptionist | x | * | x | x | * | x | x | * | x |  | x | x |  | x |  |  | x |
| 221.388 | Production Clerk | x |  |  | * | * | x | x | * | x |  | x | x | x |  |  |  |  |
| 222.387 | Shipping & Rec. Clerk | x |  |  | * | x | x | x | * |  |  | x | x | x |  |  |  |  |
| 223.387 | Stock & Inventory Clerk | x |  |  | * | x | x | x | * |  |  | x | x | x |  |  |  |  |
| 222.588 | Traffic Clerk | x |  |  | * |  | x | x | * | x |  | x | x | x |  |  |  |  |
| 223.368 | Purchasing Clerk | x |  |  | * | x | x | x | * | x |  | x | x | x |  |  |  |  |
| 205.368 | Personnel Clerk | x |  |  | x | * | x |  | * | x |  | x | x | x |  |  |  |  |
| 201.368 | Secretary | x | x | x | x | x | x |  | * | x | x | x | x | x | x | x | x | x |
| 202.388 | Stenographer | x | x | x | * | x | x | x | * | x | x | x | x | x | x | x |  | x |
| 209.388 | Clerk Typist | x | x | x | x | x | x | x | * | x | x | x | x | x | x |  |  | x |
| 203.588 | Typist | x |  | x | * | x | x | x | * | x | x | x | x | x | x |  |  | x |
| 203.588 | Statistical Typist | x |  | x | * | x | x | x | * | x | x | x | x | x | x |  |  | x |

*A starred unit of study signifies that the unit is recommended if time permits.

xA unit marked with an "x" signifies that the unit is recommended for the job title.

(Example Unit)

# OFFICE TYPEWRITING
(60 hours)

## Job Description

A typist operates the one machine found in practically every business office – the typewriter. His main job assignment is to produce typewritten copies of printed and handwritten materials.

Office typewriting requires work of a particularly high degree of accuracy and independent judgment. The typist works from rough drafts or may be required to plan and typewrite complicated statistical tables, combine and rearrange materials from several different sources, or prepare master copies from material to be reproduced by duplicating processes. A specially trained typist may operate teletypewriters, typewriters with proportional spacing, and other special kinds of typewriting machines.

## Objectives

*General*

1. The student will develop personal and vocational skills in typewriting.
2. The student will develop competency in attaining standards set for straight copy and production materials.
3. The student will develop attitudes, character traits, and behavior patterns such as concentration, judgment, initiative, cooperation, resourcefulness, perseverance, and emotional control.
4. The student will develop the ability to understand oral and written instructions, to analyze problems, and to solve these problems successfully.
5. The student will increase his ability to spell, punctuate, syllabicate, to compose good sentences, and to integrate these related learnings with typewriting skills.
6. The student will prepare for employment in business occupations.
7. The student will understand and appreciate our democratic economic society.
8. The student will develop personality traits that will be welcome in business and society.
9. The student will build good work habits and use orderly procedures for handling routines.
10. The student will assume responsibility for proofreading his own material.
11. The student will develop a feeling for style not based upon copying one style from a single textbook.
12. The student will acquire vocational information about the field of typewriting.

*Specific*

1. The student will typewrite mailable copies of all types of business letters and chain feed and address envelopes.

2. The student will typewrite, with all errors corrected, all types of tabulated reports containing any number of columns (usually 4 or 5), statistical material, from rough draft, or typed copy.

3. The student will typewrite, with all errors corrected, business communication forms.

4. The student will typewrite, with all errors corrected, business forms.

5. The student will typewrite, with all errors corrected, business reports in either manuscript or tabulated form.

6. The student will typewrite straight-copy material for 5 minutes at a minimum rate of 40 gwam with 0-3 errors.

7. The student will typewrite business letters from unarranged copy with carbon copies and envelopes for 30 minutes at a minimum rate of 15 n-pwam.

8. The student will chain feed envelopes or index cards and type a name and address on each card for 15 minutes and complete a minimum of 20.

9. The student will typewrite 4- or 5-column tables, containing statistical material and column headings, for 30 minutes at a minimum rate of 10 n-pwam.

10. The student will typewrite manuscripts with footnotes for 30 minutes at a minimum rate of 20 n-pwam.

11. The student will typewrite business forms for 30 minutes at a minimum rate of 10 n-pwam.

## Course Content

- Skill Improvement
  - Accuracy Drills
  - Speed Drills
  - Number Drills
  - Posture-checkup Drills
  - Hand-position Drills
  - Paper Insertion Drills

- Correspondence
  - Letters
    - Business Letters with Displays
      - Block
      - Modified Block
      - Indented
      - AMS

            - Open Punctuation
            - Mixed Punctuation
            - Closed Punctuation
        - Personal Business Letters
        - Letters with Two or More Pages
        - Letters with Enclosures
        - Letters with Tabulated Reports
        - Exact Copies of Incoming Letters
        - Form Letters with Fill-ins
        - Application Letters
        - Personal Data Sheets
    - Memorandums
    - Telegrams
    - Special Lines
        - Subject Line
        - Attention Line
        - Standard Carbon Copy Notation
        - Blind Carbon Copy Notation (BCC)
- Forms
    - Checks
    - Notes
    - Payrolls
    - Voucher Checks
    - Visible Index Cards
    - Discount Invoices
    - Telephone Message Blanks
    - Bills of Lading
    - Fill-in Index Cards
    - Fill-in Postal Cards
    - Bills of Sale
    - Purchase Orders
    - Correspondence Transfer Sheets
- Legal Forms and Documents
    - Proxies and Powers of Attorney
    - Acknowledgments
    - Endorsements
    - General Releases
    - Contracts
    - Wills and Endorsements
    - Leases
    - Folding
- Overside Tabulations – 14 to 16 Columns

- Spacing
  - Half Space
  - Single Space
  - One and a Half Space
  - Double Space
  - Triple Space
  - Spread and Squeeze Words

- Stencil
  - Prepare Master Copy
    - Typewrite Stencil
    - Art Work
    - Correct Stencil
    - Patching Stencil

- Ditto Master (Direct or Liquid Process)
  - Prepare Model Copy
    - Typewrite Master
    - Art Work
    - Correct Master

- Offset Master
  - Prepare Master Copy
    - Typewrite Master
    - Art Work
    - Correct Master

- Manuscript Display
  - Justify Lines
  - Display Lettering
  - Display Boxing
  - Bulletin Board Captions
  - Advertisements

- Special Techniques and Problems
  - Center on Lines
  - Spread Centering
  - Underscore for Italics
  - Take Civil Service Test
  - Insert Thick Carbon Packs
  - Quotations within Quotations
  - Draw Lines on the Typewriter
  - Change Ribbons
  - Horizontal Half Space
  - Typewriting Contest Rules
  - Direct Dictation
  - Characters not on the Keyboard
  - Compose Short Letters
  - Chain Feed Envelopes and Cards

Social Traits
- Cooperation
- Cheerfulness
- Courtesy
- Ability to Get Along With Others

Character Traits
- Dependability
- Initiative or Resourcefulness
- Acceptance of Responsibility
- Punctuality and Attendance
- Poise and Emotional Stability
- Loyalty
- Honesty and Trustworthiness
- Perseverance or Ability to Follow Through

Physical Traits
- Personal Appearance and Grooming
- Health

Mental Traits
- Judgment and Common Sense
- Ability to Grasp and Follow Instructions
- Ability to Plan and Organize Work

Attitudes
- Adaptability
- Interest and Enthusiasm
- Willingness to do Undesirable but Essential Tasks
- Willingness to Accept Criticism

Technical Traits
- Accuracy
- Neatness in maintenance of Surroundings
- Efficiency
- Neatness of Work
- Good Speech Habits
- Thoroughness
- Technical Skill in Tasks Performed

## Student Activities

Several suggested activities that may be a part of the unit on Office Typewriting are listed below for students' use.

1. Develop and maintain attractive bulletin board displays.

2. Keep a record of timed writing achievements and complete with previous scores.

3. Proofread all typewritten work and make neat corrections.

4. Make neat carbon copies.

5. Compose stories at the typewriter incorporating good English usage.

6. Develop a basic knowledge of machine parts, their usage and adjustments.

7. Acquire the habit of being rapid and systematic in handling supplies and in manipulating the typewriter.

8. Understand, analyze, and carry through to completion all instructions for solving problems before beginning to type.

9. Obtain and answer advertisements for an office typewriting position.

## Suggested Materials

*Books*

Monkhouse, Francis John. A DICTIONARY OF GEOGRAPHY. Chicago, Illinois: Aldine Publishing Company, 1970.

Whalen, Doris H. THE SECRETARY'S HANDBOOK. New York, New York: Harcourt, Brace and World, 1968.

*Miscellaneous*

Atlas

Dictionary

Directories
    City
    Telephone

Films

Integrated Projects

Postal Guides

Practice Sets

Records

Style Manuals

Tapes

Typewriting Textbooks (other than textbook being used)

## Evaluation

Evaluation will be made on the basis of:

1. The teacher's observation of the student's work.
2. The technique used by the student doing his work.
3. The work habits and traits displayed by the student in the classroom situation.
4. The performance by the student on tests given throughout the unit.
5. The student's knowledge and understanding of the material being taught.
6. The student's performance on various typewriting exercises as outlined in the objectives.

## Sample Test

1. An attention line should be considered as part of the (a) mailing notation, (b) inside address, (c) salutation.

2. The omission of a salutation and a complimentary close would indicate that the letter is probably typed in (a) block style, (b) modified block style, (c) AMS simplified style.

3. In all styles of business letters, you will find a (a) date, (b) salutation, (c) complimentary close.

4. The attention line is (a) typed at the left margin, (b) centered, (c) either typed at the left margin or centered.

5. Type an average letter in block style with open punctuation.

6. Type an average letter in modified block style with block paragraphs and mixed punctuation.

7. On a full sheet, using 1-inch margins, type footnotes in correct form and position on the sheet.

8. On a full sheet inserted sideways, center a tabulation problem vertically and horizontally using appropriate horizontal rules.

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Iowa Business Education Association and the State Department of Public Instruction. IOWA BUSINESS EDUCATION HANDBOOK. Des Moines, Iowa, 1972.

Liles, Parker and Zenobia T. Liles. A GUIDE FOR THE IMPROVEMENT OF TYPEWRITING INSTRUCTION. Atlanta, Georgia: Georgia Department of Education, 1968.

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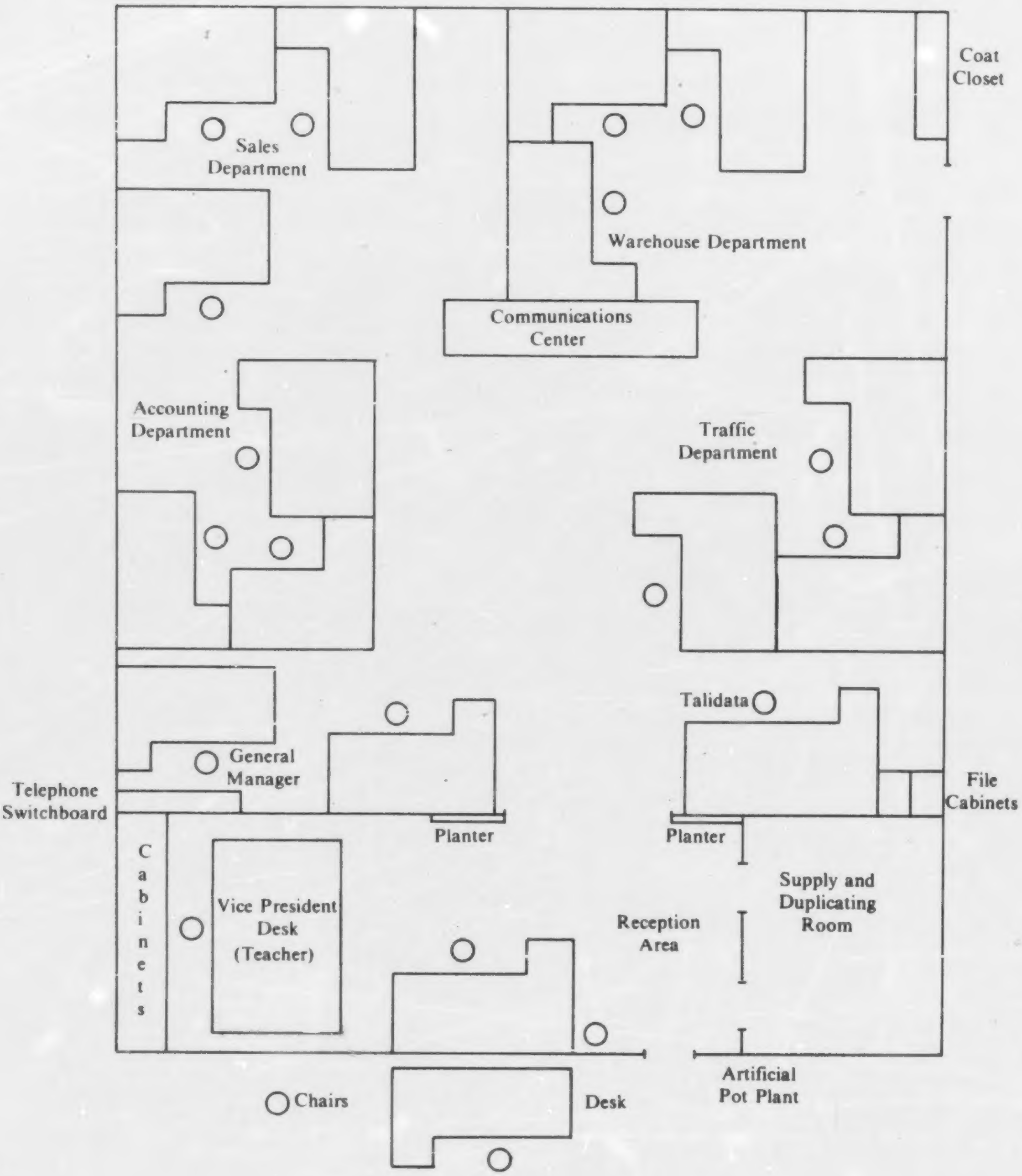
U. S. Government Printing Office. DICTIONARY OF OCCUPATIONAL TITLES, 1970.

## Bibliography

Krawitz, Myron L. LESTER HILL CORPORATION EMPLOYER'S GUIDE. New York: Gregg Division, McGraw-Hill Book Company, 1971.

Krawitz, Myron L. LESTER HILL CORPORATION EMPLOYEE'S GUIDE. New York: Gregg Division, McGraw-Hill Book Company, 1971.

## SAMPLE
## FLOOR PLAN FOR LESTER HILL CORPORATION


Coat Closet
Sales Department
Warehouse Department
Communications Center
Accounting Department
Traffic Department
Talidata
General Manager
Telephone Switchboard
File Cabinets
Planter
Planter
Cabinets
Vice President Desk (Teacher)
Reception Area
Supply and Duplicating Room
Chairs
Desk
Artificial Pot Plant

# METAL TRADES

Metal Trades

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Curriculum Laboratory
Department of Industrial Education
Mississippi State University

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Direct inquiries to:

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## HOW TO USE THIS PUBLICATION

As a tool for teaching, this publication is primarily designed for use in planning, preparing, presenting, and evaluating instruction. As a tool, it lists operations, jobs, and informational topics--with the job as the focal point. Each job should be assigned to students, either as a group, a subgroup, or individually. The following procedure is recommended as an effective teaching sequence.

*Step I. -- Tell how the job is done.*
Give a full explanation of the steps necessary to perform the job. Emphasize the proper sequence; stress techniques requiring special care; point out the hazards to persons and the equipment.

*Step II. -- Show how the job is done.*
Demonstrate the proper procedure for performing the job. Re-emphasize the sequence, techniques, and hazards. Make sure each student can see what is being done and understands the steps.

*Step III. -- Have the student do the job.*
Assign each student the task of applying what he has just learned. Supervise his work; correct any variation from proper procedure or any hazardous techniques. Re-explain when necessary.

*Step IV. -- Check the student for proficiency.*
Assign a similar job to the student to be performed independently. Observe his work and examine the completed product or service. He is proficient when he can perform the job without supervision in a prescribed length of time.

Students who have demonstrated proficiency in one job move to the next job. The teaching steps *tell, show, do, check* are used again. Students who are not proficient perform additional jobs of a similar nature and are retaught in weak areas.

Additionally, this publication can be used (1) by the director and the instructor in a local program in communicating with their craft committee, (2) by the local director in supervising instruction and program operation, and (3) by the state supervisory staff in communicating with local school administrators and in supervising the operation of local programs.

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## JOB DESCRIPTION

It is neither possible nor desirable to identify a single trade as the employment goal of all trainees enrolled in a cluster program. Conversely. several employment opportunities exist, and four of these are briefly described below. Each of these descriptions is given a fuller treatment in the Dictionary of Occupational Titles, third edition.

MACHINIST. 600.280. Machinist, all-around; machinist, first class; machinist, general· machinist, journeyman; machinist, precision.

The machinist works from blueprints, sketches, and descriptions of parts or assemblies to be made. He plans the sequence of operations and sets up and operates machine tools such as engine lathes, shapers, milling machines, drill presses, and grinders. He may fit and assemble parts, mechanisms, tools, or machines. He may also use a broad range of precision measuring and gaging instruments as an inspector.

SHEET-METAL WORKER (any ind.) 804.281. Sheet-metal journeyman; sheet-metal man; sheet-metal mechanic.

The sheet-metal man works from a job order or blueprint and selects metal according to the product being fabricated. He lays out a pattern or works directly on metal by locating and marking dimensions and reference lines while using such tools as rules, calipers, scribes, squares, and punches. He sets up and operates cutting, folding, and fastening machines to shear, brake, roll, and punch metal to specified shape. Additionally, he uses hand tools such as hammers, snips, and clamps. He joins parts, using rivets and screws as well as soldering and welding equipment. He inspects assemblies and installations for conformance to specifications.

WELDER, COMBINATION (Welding) 812.884.

The combination welder joins parts together, using gas welding (WELDER, GAS) or brazing (BRAZER-ASSEMBLER) and any combination of welding processes, such as manual metal arc, tungsten inert gas, carbon arc, and others. He works from layouts, blueprints, and work orders, and uses a variety of clamping and holding devices as well as the welding equipment unique to the process being employed at the time. Extensive involvement in fit-up of parts, or inspection of final welds depends upon advancement in the trade.

MAINTENANCE MECHANIC (any ind.) II. 638.281. Fixer; machine adjuster; machine-maintenance man; machine overhauler; machine repairman; mechanical handyman; repair mechanic; tool-and-machine maintenance man.

The maintenance mechanic repairs and maintains equipment in accordance with diagrams, sketches, operation manuals, and manufacturers' specifications. The range of machinery and mechanical equipment, such as cranes, pumps, engines, motors, pneumatic tools, conveyor systems, production machines, and automotive and construction equipment. The mechanic uses hand tools and power tools, such as wrenches, hammers, and drills, as well as precision and nonprecision measuring instruments. He troubleshoots malfunctions by listening, observing, inspecting, and testing, and disassembling. He repairs and replaces defective parts, as well as lubricates and cleans. He may set up and operate lathes, drill presses, grinders, and other metal-working tools.

A person desiring or accepting employment as a maintenance mechanic must recognize gaps in his preparation in the areas of power mechanics and basic electricity. Such gaps must be filled after employment by trade extension training.

# COURSE DESCRIPTION

## ALTERNATIVE OBJECTIVES

Either

1. To develop entry-level knowledges and skills in those trainees having an identifiable occupational goal in machine shop, or sheet metal, or combination welder

Or

2. To develop knowledges and skills which are basic to the metal trades occupational cluster, namely machinist, sheetmetal worker, and combination welder

## ASSUMPTIONS

1. That trainees have had no previous experience in metalworking
2. That trainees have a nontechnical background in general science
3. That trainees need additional instruction in the fundamentals of mathematics

## DESIRABLE PREREQUISITES

1. That trainees have a vocational commitment to one of the three trades (preferable)
2. That trainees have a vocational interest in the metal trades area
3. That trainees have a mechanical aptitude
4. That they have had or are currently taking a course in applied mathematics including arithmetic, simple algebra, plane geometry, and elementary trigonometry
5. That they have had or currently are taking a course in mechanical drawing
6. That they will have a course in applied physical science before completion of their training

## NATURE OF THE TRAINING

1. The duration of the training is normally three hours per day, five days per week, thirty-six weeks per year for two years; or, six hours per day,

five days per week, thirty-six weeks per year for one year -- a total of 1080 clock hours of training

2. Related instruction by lecture, demonstration, the use of audiovisuals, and others immediately precedes application by the trainee in shop practice: instruction and its application are correlated as closely as possible at all times; and the major allotment of time is given to the development of manipulative skills.
3. No instruction directly related to the trade is offered outside the shop

## CONTENT OF RELATED INSTRUCTION

Systematic and purposeful presentation of topics of related instruction to all trainees is strongly recommended. The instructor in Metal Trades is faced with a diversity of needs on the part of the trainees. The following is a suggested procedure:

1. Trainees with identifiable vocational goals in either sheet metal, machine shop, or combination welding are to receive related instruction appropriate to that trade. The content is identified in detail in the Curriculum Laboratory publications, Vocational Sheet Metal, Vocational Machine Shop, and Vocational Welding.
2. Trainee with a general vocational interest in the metal trades are to be given a broader background in the composition, processing, and fabrication of metals. A detailed identification of this content is contained elsewhere in this publication and is titled "Related Instruction Topics".

## TYPES AND LEVELS OF SKILLS TO BE DEVELOPED

1. Immediately marketable skills for those trainees electing to train in a specific trade
2. Basic manipulative skills of the metal trades cluster for those trainees electing broader training

## INSTRUCTIONAL BLOCKS

The following blocks are the major areas of instruction. Each has been assigned a number of hours for the purpose of indicating the relative amount of emphasis it is to receive in the total training period. Instructors are urged to plan training carefully, to select, sequence, and assign learning experience, thus making maximum use of available time. It should not be inferred that hour allotments be rigidly adhered to or that students be rotated on a clockwork or calendar basis. On the contrary, the emphasis is on individual proficiency. It is likely that students of lesser ability will require longer periods in certain areas. These students may gain only the minimum proficiencies while more able students will progress more rapidly and engage in many enriching experiences. Consequently, the planning, sequencing, and allotting are not designed to standardize programs, but to assist local teachers in planning more carefully and in conducting their instruction more carefully.

| | | |
|---|---|---|
| **I. SHEET METAL** | | |
| Scale and precision measurement | 15 | |
| Geometric construction and layout | 150 | |
| Bench work: mark out, cut out, form, fasten | 90 | |
| Form with sheet metal equipment | 105 | |
| Subtotal | | 360 |
| **II. WELDING** | | |
| Oxyacetylene welding, cutting, brazing | 90 | |
| Manual metal arc | 150 | |
| Tungsten inert gas | 120 | |
| Subtotal | | 360 |
| **III. MACHINE SHOP** | | |
| Engine lathe | 150 | |
| Drill press | 15 | |
| Shaper | 45 | |
| Mill | 90 | |
| Surface grinder | 45 | |
| Power saws | 15 | |
| Subtotal | | 360 |
| TOTAL TRAINING TIME | | 1080 |

(Example Unit)

## II. MACHINE SHOP

A. Engine Lathe

1. Plain turn (rough, finish, polish)
   a. Between centers
   b. With chuck
2. Bore
   a. Straight holes
   b. Angular holes
   c. Taper holes
   d. Multi-diameter (concentric) holes
   e. Bore and face blind holes
   f. Recess and groove inside diameters
3. Face
   a. In a chuck
   b. Between centers
   c. To radii and fillets
4. Drill
   a. Straight drill
   b. Ream
   c. Countersink
   d. Drill and countersink
   e. Counterbore

5. Thread
    a. Chase external threads
    b. Chase internal threads
    c. Chase taper threads
6. Taper turn
    a. Using compound rest
    b. Using taper attachment
    c. Using offset tail stock
7. Grind, using tool post grinder
    a. External grinding
    b. Internal grinding
8. Use accessories
    a. Faceplate turning
    b. Use of steady rest

B. Drill press
    1. Straight-drill flat stock
    2. Straight-drill round stock
    3. Countersink
    4. Counterbore
    5. Ream
    6. Tap
    7. Spot-face

C. Shaper
    1. Shape horizontal surfaces
    2. Shape angular surfaces
    3. Shape vertical surfaces
    4. Shape grooves and external keyways
    5. Shape internal keyways
    6. Serrate

D. Mill

   1. Horizontal

      a. Plain-mill a horizontal surface
      b. Plain-mill a vertical surface
      c. Cut a slot
      d. Cut a keyseat
      e. Make an angular cut
      f. Drill and ream holes
      g. Enlarge holes by boring and counterboring
      h. Cut spur gears
      i. Cut helical gears

   2. Vertical

      a. Plain-mill a surface with an end mill
      b. Drill and ream holes
      c. Enlarge holes by boring and counterboring
      d. Cut a slot; cut a T slot
      e. Set up and cut flues and splines

E. Bench grinder

   1. Sharpen hand tools
   2. Form grind

F. Surface grinder (vertical spindle)

   1. Grind a plain surface
   2. Grind an edge or end
   3. Step-grind an edge, end, or face
   4. Form-grind an edge or end

G. Power saws

   1. Reciprocal hacksaw: cut off ferrous and nonferrous metals
   2. Band saw

      a. Straight-cut single pieces of stock
      b. Contour-cut single pieces of stock
      c. Cut internal contours of single pieces
      d. Make straight and contour cuts of stacked, multiple pieces

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Glazener, Everett R. Basic Metalwork. Austin, Texas: The Steck Company Publishers, 1962.

Glazener, Everett R. General Metalwork. Austin, Texas: Steck-Vaughn Company, 1962.

Smith, Robert E. Forging and Welding. Bloomington, Illinois: McKnight and McKnight Publishing Company, 1967.

# COOPERATIVE VOCATIONAL EDUCATION

# A HANDBOOK FOR COORDINATORS OF COOPERATIVE EDUCATION

Revised by

Bennie N. Evans
Cooperative Education

Published by

Mississippi State University
**CURRICULUM COORDINATING UNIT**
**FOR**
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*Shown in this section.

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## Definition of Cooperative Vocational Education

Cooperative vocational education is defined in Part G of the Vocational Education Amendments of 1968 as follows:

> "... a program of vocational education for persons who, through a cooperative arrangement between the school and employers, receive instruction, including required academic courses and related vocational instruction by alternation of study in school with a job in any occupational field; but these two experiences must be planned and supervised by the school and employers so that each contributes to the student's education and to his employability. Work periods and school attendance may be on alternate half-days, full-days, weeks, or other periods of time in fulfilling the cooperative work-study (vocational education) program."*

### Analysis of the Definition of Cooperative Vocational Education

1. Cooperative education is a combined effort focused on bringing relevancy to formal instruction through alternating employment in a community with classroom instruction.

2. The legal definition of cooperative vocational education indicates the integration of academic, vocational and on-the-job instruction. The three criteria contained in the legal definition are: (1) Students must receive classroom instruction in required academic courses and related vocational courses, as on-the-job instruction is a job related to the classroom instruction. (2) These experiences must be planned and supervised by the school and employers so that each contributes to the education and employability of the student. (3) Work periods and school attendance are usually on alternate half-days, full-days, weeks or may be at other periods of time. This combination of school and work, and theory and practice, provides youth with a dependable bridge from school to full-time employment or to advanced study.

There is an inconsistency in the terminology in the Act in that Part G is titled "Cooperative Vocational Education Programs" and the definition in Section 175 refers to "cooperative work-study programs." It was decided by the task force that the term "work-study" should be dropped and the term "cooperative vocational education" should be used in order to avoid confusion between the programs described in Part G and "Part H - Work-Study Programs for Vocational Education Students."

It should be clearly understood that the regularly reimbursed cooperative vocational education programs will be funded under Part B of the Act. Hence, each State may formulate its own requirements for Federally assisted programs within the language of Parts B and G and the definition of cooperative vocational education in the Regulations for State Plan Programs.

*The U.S. Office of Education, Bureau of Adult, Vocational & Library Programs, Vocational Education Amendments of 1968 Regulations for State Plan Programs, April, 1969, 142 p. Cooperative vocational education is defined in Sec. 102.3(g) in the same words as Part G.

(Example Unit)

## SECTION I – ADMINISTRATION AND ORGANIZATION

### INTRODUCTION

The nature of Part-time Cooperative Education is such that a continuous effort must be exerted to design new ways and means, as well as to improve tried methods, of implementing the objectives of the program. The local coordinator bears the greatest responsibility for the program in any given situation. His success greatly depends on his ability to use methods and techniques which have been tried and proved to be successful. It must not be implied, however, that individual initiative and ingenuity on the part of the coordinator is not a success factor. It is through individual ability and effort on the part of many coordinators that most methods and techniques have been developed.

The successful coordinator is one who is able to inject into his program factors of his own personality–his individuality, initiative, special abilities, etc.,–as well as to profit from the experiences of others. This handbook contains many experiences of others–methods and techniques which have been developed and used by coordinators in Mississippi schools over a period of years. Such a compilation is intended to serve merely as a guide in developing basic procedures. The term "handbook" implies that this bulletin may be used much as an automechanic uses his manual–as a source of technical information. Such usage would tend to result in a certain amount of uniformity in programs throughout the state, which in many respects, would be desirable. Certainly no coordinator should be satisfied with a program which does not provide at least for the application of the basic methods herein outlined. In fact, the successful coordinator will go beyond this point and develop additional tools and techniques to better meet the needs of his students as individuals.

The chapters dealing with the "Use of the Study Guide," should be particularly helpful. It is through development and perfection of methods in this respect that most improvement and progress will be accomplished. The study guide is a device which, when properly used, serves as a fundamentally sound basis upon which a strong program of related instruction may be developed. The coordinator is cautioned, however, that use of the study guide, to the exclusion of all other devices and methods in directly related instruction will tend to become monotonous to the student. Here, as in other educational processes, variety is essential; and the coordinator is responsible, as are all instructors, for providing learning experiences to meet individual needs and interests.

Special attention is directed to, "Criteria for Evaluation." This approach to evaluation is sound and the plan should be helpful in the continuing process of self-evaluation. In any effort to measure the effectiveness of his own program, the coordinator will no doubt see many opportunities for improvement. He may even find it helpful to seek the cooperation of others–students, faculty members, administrators, parents or employers–in evaluating certain sections.

## SECTION II – THE COORDINATOR'S ROLE

### DUTIES OF THE COORDINATOR

A coordinator is a qualified individual who is employed to coordinate the efforts of the school, the employers, and the home, and to assist students in discovering their potential, selecting realistic occupational goals, entering programs of vocational training, and succeeding in their chosen occupations. It should be emphasized here that the principal duties and responsibilities of the coordinator are: (1) To the students; (2) To the employers; (3) To the school administrators; (4) To the parents; and (5) To the community. These duties are stated briefly, as follows:

To the Student:

1. Explain the purposes and operational procedures of the program of part-time cooperative training.
2. Make available proper information about occupations and occupational trends.
3. Assist him in making a realistic occupational choice based on understanding himself and the opportunities available to him.
4. Make proper placement and supervise him while in training.
5. Provide proper training plan, in cooperation with employer, for each student.
6. Prevent exploitation; work out pay-scale plan.
7. Establish progress and permanent record systems.
8. Provide adequate reference materials for directly and indirectly related study.
9. Create sincerity in the students and an interest in following chosen occupation after graduation.

To the Employer:

1. Interpret the program–its purposes and operational procedures.
2. Recommend students who will profit most from training employer can offer and who, at the same time, will fit best into the employer's organization.
3. With the employer, develop a training plan (including related instruction) and ascertain his correct understanding and acceptance of it.
4. See that placement is justified.
5. Continually strive to further students' proper attitude toward job, employer, and co-workers.
6. Provide students the proper instruction in related subjects.
7. Adjust all complaints.
8. Transfer or remove misfits.
9. Carry out systematic plan of coordination (supervision).

To the School Officials:

1. Develop and maintain a clear understanding of the purpose and plan of the program—with administrative staff and faculty.
2. Establish and maintain cooperative working conditions.
3. Abide by disciplinary regulations which apply in the school.
4. Assist in planning schedules to meet the needs of students in part-time cooperative training programs.
5. Seek aid of teachers and counselors in making personal analysis or appraisal of each student.
6. Recognize that teachers also have problems.
7. Contribute pertinent data to be included in Mississippi Cumulative Record form and make own records available as deemed desirable for benefit of each student.
8. Seek aid in developing study materials for trainees.
9. Follow proper lines of authority in all matters.
10. Keep permanent records showing:
    - (a) Number enrolled.
    - (b) Number employed.
    - (c) Cost of instruction.
    - (d) Pay of students.
    - (e) Other – as required or suggested.
11. Encourage surveys, follow-up, and other studies to identify needs of both student and community.
12. Work out yearly plan and budget.
13. Make arrangements for publicity regarding the program.

To the Parents:

1. Maintain cooperative relations with parents.
2. Be able to justify placement, adjustments, or transfer of students.
3. Keep expenses of program within reasonable bounds.
4. Stress the importance of students' training in worth-while occupations.

To the Community:

1. Establish a clear understanding of the program.
2. Cooperate with all public agencies.
3. Create and maintain public support.
4. Keep the public informed of progress.
5. Assemble accurate data.
6. Provide adequate training opportunities at reasonable cost.
7. Keep informed as to changing business and industrial trends.
8. Avoid stirring up unpleasant situations.

It should be re-emphasized here that the coordinator of a good cooperative education program works in close harmony with school officials, employers, students, parents, and the public in general. The coordinator's versatility, tact, and initiative determine in large measure the success of any local program.

## COMMUNITY SURVEYS

No program of vocational education will be successful unless it is founded upon realistic employment opportunities.

As the coordinator goes about his work, he should strive to determine the vocational training needs in his community as well as the effectiveness of his program in meeting these needs. If he is to do this successfully, he will need to make continuing surveys of various kinds.

The coordinator's first efforts must go into an informal survey. The local plan for vocational education must point out training needs and opportunities. The coordinator must begin early to find those businesses that have the facilities to train students.

There are several sources the coordinator can use to begin compiling this information. The Chamber of Commerce, employment service, civic clubs, industrial development groups, local newspapers, and telephone directories can be valuable sources of information. All of these can be used to make a list of vocational employers.

Another source of information that deserves special mention is the advisory committee. This committee could be extremely valuable in compiling not only a list of employers who have the facilities for training a student, but also those who might be interested.

True enough, gathering information as suggested above is not of the same scope as a more detailed survey, but these methods will give an indication of the community's needs which the school must meet. Keen observation by the coordinator as he goes about the daily routine of his work will certainly increase his knowledge of community training needs.

After the cooperative education program is in operation, a detailed community occupational survey can be made if the coordinator feels he needs more information. For a more complete discussion on methods and techniques used in conducting a survey of this type the coordinator can obtain Community Surveys for Educational Purposes from the Curriculum Coordinating Unit, Drawer DX, State College, MS 39762.

## ADVISORY COMMITTEES

Vocational educators have long suggested that each program of vocational education operate with the advice and counsel of an advisory committee. The 1968 amendments to the Vocational Act of 1963 make national and state advisory councils mandatory. The Mississippi State Plan for Vocational Education requires that each local program operate with an advisory committee.

A representative advisory committee, which has been carefully selected by the coordinator and the school administrators, can make a vital contribution to any program of vocational education. If the members of such a committee are wisely selected and the meetings are well planned, it can be of unlimited assistance to the coordinator. Each program should have a general advisory committee which will advise the coordinator throughout the year on the operation of the entire program.

The school administration may have to be convinced of the need for an advisory committee. Emphasis should be placed on its function. It must be made clear that these committees are not policy making committees. Rather, they can be of considerable help in keeping the program in tune with the needs of the community and, in turn, keeping the community informed regarding specific contributions being made by the school in meeting these needs.

In planning the membership of the advisory committee, caution must be taken to ensure that it is truly representative. The term "representative" is interpreted to mean that advisory committees shall include equal representation from labor and management and that members shall be appointed by the groups which they represent. The size of the committee may vary from three to fifteen members, but experience has proved that a committee of five members probably operates most efficiently. A suggested representative advisory committee might be composed of two representatives of labor, two representatives of management, and one representative of the professions.

The coordinator should work with labor, management, and professional groups in compiling a list from which members of an advisory committee could be named. The actual selection of the members should then be made by school administrators and the coordinator. It is suggested that the "central labor committee," where one exists, be requested to supply names of individuals acceptable as representatives of organized labor. From this list school officials can select those whom they believe best qualified to serve as members of the advisory committee. A similar procedure might be followed in the selection of representatives from management. In the absence of management organizations, the Chamber of Commerce will serve very well as a recommending agency. Before the actual appointment of the members of the advisory committee, it would be well to determine if they are willing to serve in such capacity. A letter of appointment (or request to serve) written by the school superintendent should be mailed to those members who are selected.

Immediately after the general advisory committee members have been appointed, an organizational meeting should be planned so that the committee can begin functioning. This first meeting is very important. An agenda should be planned to the last detail, including time and place of the meeting, and copies of the agenda duplicated and sent to each member in advance.

The coordinator must exercise great care in properly orienting advisory committees. He must make absolutely certain that no misunderstandings arise as to the proper functions of such committees. He must see that each committee member fully understands that the objectives of the committee are to advise the school on operating and improving its instruction in the field of vocational education. The coordinator must orient the advisory committees so well that members properly comprehend their specific duties. Some general duties of the advisory committee are:

1. To advise and guide the coordinator in organizing, operating, and improving the program of part-time cooperative training.
2. To help determine various occupations for which there is a definite need for training.
3. To assist in job placement (selection of firms or employers).
4. To assist in selling the program and in keeping it sold.
5. To approve content material for courses.
6. To assist in the selection, placement, and follow-up of trainees.
7. To assist in obtaining the cooperation of labor, employers, and the school.
8. To assist in maintaining the highest possible standards for the program.

## STUDENT SELECTION AND PLACEMENT:

### Selecting Occupations

No other phase of the coordinator's work is more important than the selection of the occupations in which to place student-learners who are enrolled in the part-time cooperative training program. If occupations in which students are being trained are carefully chosen, the coordinator will not find it difficult to defend his program. The diligent coordinator will develop a list of accepted occupations which he knows will meet all requirements.

After the coordinator has studied the training needs of the community, either by observation or detailed survey, he is in a better position to determine which occupations should be included in the program. Probably the best method for the coordinator to use in the selection of occupations is to develop criteria by which to judge the occupations in the community. Following are suggested criteria for use in determining whether or not occupations are suitable for inclusion in the program:

A. An affirmative answer to the following questions probably indicates acceptance:
   1. Is the job complex enough to represent a genuine training opportunity?
   2. Are there recognized training programs that require an amount of time for completion at least equal to the amount the cooperative student would spend on the job?
   3. Is the job complex enough that the student would be learning during his entire training period?
   4. Does the occupation provide opportunity for employment and advancement after training?

B. An indefinite answer to any of the following calls for further and more careful consideration:
   1. Is the occupation becoming obsolete or is there indication that it may?
   2. Is it now crowded or becoming automated?
   3. Is it common to a broad geographical area, or is it "local" in nature?
   4. Is advancement dependent on qualifications other than training and experience?

C. A negative answer to any of the following may disqualify an occupation unless overruled after careful consideration by the advisory committee:
   1. Is there opportunity for training of a part-time student?
   2. Are ample instructional materials, including study guides, available?
   3. Is part-time on the job feasible and acceptable to the employer?
   4. Is the work involved "full-time" in nature as contrasted with seasonal?
   5. Is the work involved socially acceptable in the area?
   6. Will success in the occupation offer reasonable opportunity for promotion and be financially rewarding?
   7. Can preparation in this field be reasonably expected to provide opportunity for promotion to, or in, a directly related field?

In addition to the above list, the coordinator must be ever mindful of the fact that some occupations have been listed as hazardous by the Fair Labor Standards Act, and persons under eighteen years of age are prohibited from working in them.

For a more complete explanation of the hazardous occupations, the coordinator should contact the U.S. Department of Labor, Wage and Hour and Public Contracts Divisions, 1931 Ninth Avenue South, Birmingham, Alabama 35200. Upon request, that office will send resumés of the portions of the Fair Labor Standards Act and amendments which pertain to cooperative part-time training programs. Even if a student is eighteen years of age, the coordinator should be very careful about placing him in a hazardous occupation since the coordinator's first obligation is to the individual student and his welfare. If a student should be injured on the job, the school would not be involved legally, but an incident of this nature would create a great deal of unfavorable publicity for the program.

Having once decided upon the criteria which will be used in selecting the occupations for his part-time cooperative training program, the coordinator should then apply them to every occupation under consideration. There are various ways in which this could be accomplished. A suggested method would be to compile the criteria in the form of a check list that could be easily used. Frequently there are many occupations about which the coordinator has little information. This lack of knowledge may be compensated for by talking with labor management groups, observing employees in that occupation, studying occupational reports and surveys, and by talking with employers and employees. The advisory committee can be of invaluable assistance in evaluating the various occupations.

## STUDENT SELECTION AND PLACEMENT:

### Selecting Student-Learners

It is recommended that a student be sixteen years of age and a high school junior or senior before enrollment in the cooperative program. These are not, however, the only qualifications which should be considered by the coordinator. He should strive to enroll those students who will profit most from the training offered. The cooperative program was established to offer on-the-job training in occupations for which the student has appropriate physical and mental abilities, vocational interest, aptitudes, and personal characteristics. Since this is one of the guiding principles of the program, the coordinator must strive to secure as much information as possible about each student who wishes to enroll.

There are many aspects of a student's life which the coordinator should study to enable him to understand more fully the student and his potential. The coordinator should gather information pertaining to the student's:

1. Ability to learn
2. Past achievement, including courses studied, grades received, and results of standardized tests
3. Interests, hobbies, and activities
4. Aptitudes
5. Personal-social development
6. Health status
7. Home and family background
8. Occupational objectives
9. Past work experience, if any

The easiest and least time-consuming method of studying individual students is through analysis of data contained in the Mississippi Cumulative Record which is required to follow a student from first through twelfth grades. Most schools participate in the statewide Minimum Testing Program, and many supplement these standardized scholastic aptitude and achievement tests with standardized measures of interests, problems, and special aptitudes. All such test results should have been recorded in the cumulative records and should be studied carefully along with all other data thereon or therein.

In lieu of, or in addition to, up-to-date cumulative records, the coordinator should develop techniques for collecting the kinds of data listed above. These suggestions may prove helpful:

1. With cooperation of the school counselor and/or County Director of Guidance Services, select, administer, score, and interpret results of a battery of standardized tests–including:
    a. A multi-factor scholastic aptitude test
    b. A general development (or achievement) test
    c. An interest inventory
    d. One or more aptitude tests (in areas in which the student indicates interest)
2. Teachers may provide assistance by contributing anecdotal reports, checking personality traits on a rating scale, writing recommendations, participating in case conferences, etc. Since all of these are subjective techniques, more than

one teacher should be asked to evaluate each student. The coordinator himself should observe each student in as many situations as possible – in classes, corridors, study hall, library and assembly periods, co-curricular and outside school activities, and during the student interview.

3. A study of the student's scholastic record to date will indicate how diligently a student has applied himself, the areas in which he has met with the most and the least success, and whether or not he has studied the courses, if any, usually considered prerequisite to success in the occupational area for which a preference has been indicated. (Caution: low grades may indicate many things other than lack of ability. Try to determine some of these causes before refusing to admit a student on this basis alone.)
4. A questionnaire regarding health status might be completed by each student. Since students are not always aware of physiological disorders, it is a good idea to corroborate information provided by the student during conferences with parents, former teachers, the school counselor, and possibly even his personal physician. Careful study should be made of the record of absences and tardies. Where there is any question regarding the physical capacity of the student to do the work or the effects of the job on his health, the student may be requested to submit a doctor's report following a medical check-up.
5. The form used by students in making application for part-time cooperative training may include questions about his home and family background. Additional information may be obtained by visiting his home and by talking with the student and members of his family. The application form may also request the student to provide information (not recorded elsewhere) concerning hobbies, activities, previous work experiences, aims, goals, etc.

After the coordinator has collected as much pertinent information as possible about each student, he should organize and summarize these data for the following reasons:

1. For his own use in determining whether or not a student might profit from such a training experience.
2. As a basis for helping each applicant understand himself better in order that he might be realistic in his vocational choice.
3. To enable him to readily answer questions which a potential employer may have about the qualifications of the student.

It is imperative that the coordinator accept those students who can and will profit from this unique cooperative effort, and that he do all within his ability to place these students in training situations in which they can and will succeed. In this respect the coordinator is, in effect, a personnel manager. He owes it to the students, the school, the employers, and the community – as well as to himself – to use the most pertinent, effective, and efficient student selection procedures at his command. To a great extent the success of the entire program depends on the type and qualifications of students who are placed in training situations in the community.

## STUDENT SELECTION AND PLACEMENT:

### Selecting Training Stations

If the training of students in particular occupations is to be carried out in a useful and practical way, much depends on the proper selection of training agencies for such occupations. The coordinator should in no way confuse the proper selection of training stations with the proper selection of occupations. Actually one complements the other, but the proper selection of one does not insure the proper selection of the other.

In selecting the training stations, as in selecting the occupations, the coordinator should develop criteria to be applied to each training station before he finally places students there as trainees. In this instance, also, he might develop a check list which could be used in applying the evaluative criteria which he has selected. Then he should apply this check list to one training station at a time. The following is a check list the coordinator might adapt and use:

TRAINING STATION: DATE:

| Characteristics | Very Poor | Poor | Fair | Good | Very Good |
|---|---|---|---|---|---|
| 1. The employer's attitude toward his employees | X | | | | |
| 2. The employer's attitude toward the cooperative training plan | | | | X | |
| 3. The variety of equipment and facilities | | | | | X |
| 4. The condition of equipment and facilities | | X | | | |
| 5. Wages and salaries of full-time employees | | | X | | |
| 6. The adequacy of personnel for training purposes | | | | X | |
| 7. Reputation of the business | X | | | | |
| 8. Employer's attitude toward the public | | | | | X |
| 9. Working conditions in the business | | | X | | |
| 10. Health and safety precautions taken | | | | X | |
| **Number value of each rating** | 2 | 4 | 6 | 8 | 10 |
| **COLUMN TOTALS** | 4 | 4 | 12 | 24 | 20 |
| **TOTAL RATING** | | | | | 64 |

After the coordinator has studied thoroughly all available data about each student-applicant, and the occupation which the latter is best qualified to enter as a trainee has been mutually determined, the coordinator's next responsibility is that of evaluating and selecting the best possible training station for each student. (It is assumed that the first procedure can be accomplished best as a part of the regulár spring registration and the second step may be taken during the summer months.)

There are several ways in which an initial listing of possible training agencies might be made. One way to compile such a list might be for the coordinator to walk through town and write down the names of businesses which appear to be acceptable. Or he might turn through the classified section of the telephone directory or the city directory in search of the names of places of business in which his pre-determined list of occupations might be found. The local secretary of the Chamber of Commerce, the chairman of an area development committee, members of the advisory committee, other school staff members, representatives of civic organizations, the local office of the Employment Security Commission—all these and others can be of valuable assistance in listing potential agencies. If survey data are available, the coordinator can use such reports to advantage in this selection process.

The coordinator should then apply his criteria as a means of final selection of training agencies. One way to do this is to visit the place of business in question and spend as much time as necessary to arrive at a rating for each training station. This type of evaluation may appear to be fairly superficial at first, but the longer a coordinator uses this technique the more effective he will become in his evaluation. In order to supplement his own personal evaluations of each training agency, the coordinator will find it helpful to confer with school officials and others who have been in the community for a longer period of time than he. Such people should be able to give fairly accurate estimates of the reputation of the business, previous experiences in attempts to train students, etc. Frequently, they will know the employer personally and can give personal information about him. In any event, the final evaluation of potential training stations should be a function of the general advisory committee. Only after he has satisfied himself that the employer's business could provide justifiable training stations should the coordinator go to the employer and ask for his cooperation in training a student-learner. In securing this cooperation, the coordinator must describe the program in detail and make absolutely certain that the employer understands that the major function of the part-time cooperative training program is educational and that it is not a program which simply affords students the opportunity of earning extra money during school hours. The employer must not only understand both the purpose and intent of the program, but he must also accept as his share of the cooperative effort responsibility for working jointly with school and student in accomplishing its objectives.

The coordinator, in securing the employer's cooperation, should point out that, through the part-time cooperative training program, the employer benefits in the following ways:

1. Has access to carefully selected personnel
2. Is able, with the help of the school, to train potential employees to his specifications
3. With the aid of the school, is able to train future employees at less cost
4. Shares in the civic responsibility of encouraging boys and girls to remain in school and to become productive and useful citizens
5. Helps keep training content and methods up-to-date

Once an employer has shown an interest in cooperating with the school in training a student, the coordinator should, at the employer's convenience, describe the records which must be maintained. The employer and the coordinator should plan together an on-the-job training program for the student which will enable him to be rotated on the job until he has reached a proficiency level in every job operation which is included therein. Each item in the Memorandum of Training (appendix H), should be thoroughly explained to the employer.

The employer should understand that he is expected to help evaluate the student. An explanation regarding items listed on the Student Report Form (page 67) which he will fill in, will alert him to observe many factors regarding the student. The coordinator should stress the fact that the student will be spending one or two periods of each school day studying material directly related to his job and that suggestions from the employer with regard to areas in which the student needs to place particular emphasis will be appreciated.

In selecting training stations the coordinator must be constantly on the alert in judging whether or not a business is considered to be engaged in interstate commerce. If a business is so engaged, the employer must understand that he is to pay the minimum wage applicable under the Fair Labor Standards Act. The employer and coordinator may wish, however, to secure a student-learner's certificate so that the employer may pay less than the minimum wage and still be in compliance with the law. This student-learner's certificate may be secured from the United States Department of Labor, Wage and Hour and Public Contracts Division, 1931 Ninth Avenue South, Birmingham, Alabama 35205.

The coordinator must explain to the employer that for all tax purposes the student-learner is considered as a regular employee, and all taxes which are paid for full-time employees must be paid for the student-learner also.

## STUDENT SELECTION AND PLACEMENT:

### Placing Student-Learners

After the coordinator has selected the occupations, training agencies and students for the part-time cooperative training program, he must then earnestly endeavor to place the right student in the right training agency. No hit-or-miss methods should be employed in the placement process for there are many things to be learned and the available time is short. The coordinator should place a student in a training agency only when he is satisfied that the student possesses appropriate aptitudes, interest, and physical and mental characteristics. Student and employer should be properly oriented as to the part each will play in the training process before the placement process is completed.

Actually the placement process should begin long before school starts in the fall. Some coordinators elect to place their students in June and permit them to work during the summer months before admitting them to the cooperative training program. If this plan is followed, the coordinator must be careful to avoid placing students who need extensive orientation before placement. It is permissible to delay the actual placement process until two or three weeks before school begins. This will normally provide ample time to secure placements for all students enrolled in the program. At any rate, all students should have been placed before the end of the second week of school. It is inexcusable to delay placement beyond this time. Those students who have not been placed at the end of the second week of school should re-enter the regular program subject to recall when and if suitable placement is arranged.

The merits of summer placement should be carefully considered. Such a plan enhances, with adequate supervision, the probability of getting the right student on the right job.

Theoretically, the coordinator will have thoroughly explained the part-time cooperative training program to the employer when he secured his agreement to train a student in his place of business. Frequently, however, one explanation is not sufficient basis for assuming that the employer truly understands what part he is to play in the program. It is generally wise to review the program with the employer just prior to placing a student with him. During such a review the coordinator should determine the exact hours when the employer would like to have the student work. The employer should be encouraged to determine a specific wage scale for the student-learner. The employer should be given pertinent background information which has been collected about the student. The employer is entitled to this information. The training of a student-learner is a cooperative undertaking of the school, the coordinator, and the employer. In order for the employer actually to be of the greatest benefit to the student, he must first know something about him. Too, final acceptance or rejection of the student rests with the employer, and he should have enough information about a student to enable him to make an intelligent decision. During the pre-placement conference the coordinator should ask the employer to designate a convenient time to interview the student-applicant.

After the coordinator has conferred with the employer, he should talk with the student prior to the student's reporting for his employer interview. The coordinator should give the student information about the background of the business in which he is to seek placement and the training opportunities it may provide him. This will enable him to prepare himself more intelligently for the first interview with the employer.

Student-learners are usually young, inexperienced, and, for the most part, have never been interviewed by an employer. Just prior to an interview with a potential employer, therefore, the coordinator should take time to instruct the student in simple techniques of interviewing. This will give the student-learner increased poise and confidence while talking with an employer. The student will profit from suggestions such as the following:

1. Arrive promptly for the interview, preferably five minutes before the scheduled appointment.
2. Ask for the specific person (preferably by name) who is to do the interviewing.)
3. Upon approaching the interviewer, introduce yourself, state your reason for being there, and present a letter or card of introduction which the coordinator has given you.
4. Be seated when asked to do so. If you remain standing, stand erectly on both feet.
5. Give your undivided attention to the interviewer.
6. Look at the employer and not out the window.
7. Answer all questions concisely in a clear audible voice.
8. Sense the end of the interview, thank the employer, and leave immediately.

During the pre-interview conference, the personal grooming of the student should be checked very carefully. The coordinator should caution students regarding the following:

1. Neatness, cleanliness, and good repair of wearing apparel.
2. Shoes should be clean, polished, and in good repair.
3. Appearance of hair–boys neatly trimmed, and girls with hair styles considered appropriate for working.
4. Appropriateness of dress–better to be conservative.
5. Personal cleanliness.
6. Conservative use of cosmetics, including perfume.

Preferably, the coordinator will determine whether or not a student is ready to appear for an interview and then send him directly from his office to talk with the employer. The coordinator should accompany the student only when unusual circumstances surround the interview or when requested by the employer to do so.

The coordinator should make a follow-up check on each student he sends for an interview. As soon as possible, he should learn what decision has been reached by the employer. If the employer has decided that he would like to interview other students before reaching a decision, the coordinator should be prepared to send other students to talk with him. Following each student-employer interview, the coordinator should confer with the student to ascertain his perception of what transpired and to answer any questions the student might have. As soon as the employer has selected his student-learner, the "Memorandum of Training" should be executed. This enables the placement process to be culminated in a business-like manner. The student is not legally placed until the "Memorandum of Training" bears the signatures of all concerned.

## YOUTH ORGANIZATIONS

All learning does not take place in the classroom. Learning is a dynamic cycle, never completely stopping nor starting anew. Every activity in which a person has a new experience results in learning. This alone probably justifies co-curricular activities.

Since the foregoing is true, the coordinator has an excellent opportunity to promote increased learning experiences for the students enrolled in the part-time cooperative training program. The schedules of these students do not allow them to participate freely in many of the regular co-curricular activities of the school; however the students in the part-time cooperative program should be encouraged to participate in regular school activities as much as possible. Youth clubs should be organized expressly for vocational students. These clubs, functioning as a part of the course, provide activities which can be made to fit program objectives and schedules.

Each of the vocational youth organizations has specific, stated objectives. Since they are separate clubs operating within different instructional programs, their objectives vary. However, they all have some general purposes in common. Some of these purposes are as follows:

1. To develop leadership abilities.
2. To encourage scholarship.
3. To develop positive character traits.
4. To develop an appreciation of civic and social obligations.
5. To promote good fellowship.
6. To encourage a professional attitude toward work and study.
7. To promote good citizenship.

The vocational youth organizations in Mississippi are listed below. For further information about these clubs, the coordinator should contact the individuals listed.

Distributive Education Clubs of America (DECA)

Mr. William H. Pace, State Supervisor
Distributive Education
P. O. Box 771
Jackson, Mississippi 39205

Future Business Leaders of America (FBLA)

Mr. E. C. McCracken, State Supervisor
Business and Office Education
P. O. Box 771
Jackson, Mississippi 39205

Future Farmers of America (FFA)

Mr. T. E. Ellis, State Supervisor
Agricultural Education
P. O. Box 771
Jackson, Mississippi 39205

## SECTION I – DIRECTLY AND INDIRECTLY RELATED INSTRUCTION

### TECHNIQUES OF INSTRUCTION

The instruction offered in a cooperative education program can easily be divided into two types: directly and indirectly related. Directly related instruction can be described as that instruction the student should have in order to perform efficiently and intelligently in his chosen occupation. For example, the student mechanic needs to know why the intake and exhaust valves in an engine are ground at different angles, and the secretarial trainee, in order to do her job well, needs to know how to type several different styles of business letters.

Indirectly related instruction is instruction that all persons going to work, in any occupation, should have. For example, anyone entering the job market should know something of what his employer expects of him, some of the techniques of getting along with people, and how to manage his new income.

The successful coordinator plays many roles in the performance of his varied responsibilities, but none is more important than that of teacher. As such, he bears full responsibility for providing adequately for both directly and indirectly related instruction in the classroom. In some respects he has a number of distinct advantages over most other regular subject matter teachers:

A. Students elect the part-time cooperative training program because they are interested and desire to profit from the training offered.
B. Probably no better opportunity is available in the whole school program to practice all the best known techniques of individualized instruction.
C. Adequate classroom facilities usually provide the atmosphere of a laboratory where there is freedom of movement; tables and chairs permit small groups, interested in the same occupation or project, to work together; and sufficient basic reference materials permit most work to be done within the room.
D. Motivation is higher than in some courses since there is ample opportunity for individual initiative in selecting and working on meaningful assignments correlated with on-the-job experiences. Thus, there is little or no "waiting period" to see the results of learning.
E. The coordinator has the satisfaction of being directly involved with youth during the transition period from formal education to placement on the job.

The above advantages shouldn't leave the impression that the coordinator won't have to recognize and solve some problems which may arise. However, "prevention is worth a pound of cure," and the alert coordinator will take steps to forestall difficulties. Interest in related instruction can be aroused and maintained by using a variety of teaching techniques and, so maintained, will help reduce the number of discipline problems which might arise in a less well organized program of activities.

Students' attitudes toward the whole program of related instruction will be reflected in the attitude of others–within the school and the community–toward part-time cooperative training. If the students' attitudes are good, parents and others in the community will become aware of the program's major objective—namely, the growth and development of an individual student into a resourceful and successful worker, one who is recognized as a worthwhile individual prepared to be a contributing member of society and his community.

The nature of the occupational training offered in cooperative programs allows different methods of teaching to be used for directly related instruction. Individualized instruction, through the use of study guides, is necessary in some programs, but in others, extensive use can be made of lecture and other types of group instruction.

In Diversified Occupations, or all-service programs, students may be employed in occupations ranging from veterinarian's assistant to secretary, jewelry sales, and plumber. These occupations have very little, or no, skill or knowledge in common. Directly related instruction in this case must be individualized through the use of study guides and reference materials.

Even specialized Trade and Industrial cooperative programs offer instruction in widely diverse occupations. Occupations range from welding to cosmetology. This makes completely individualized directly related instruction necessary.

Specialized programs in Distributive Education and in Business and Office Education, however, may operate differently. Any student training in a Distributive (Sales and Marketing) occupation needs the basics of salesmanship, advertising, and display. Any student in an office occupation needs typing, some filing, telephone technique, etc. In these classes, directly related instruction can be offered using group instruction methods.

Some of the training, even in these programs, probably should be individualized. A student who sells at a service station, and one who sells ready-to-wear, have certain common needs. However, their jobs differ enough so that a minimum of a unit on merchandise information should be individualized. The same principle would apply, for example, to a switchboard operator and a secretary-stenographer in a Business and Office Education program.

A large part of the remainder of this handbook is devoted to techniques and methods of offering individualized directly related instruction through the use of study guides and reference materials.

Course outlines are available for those cases where study guides are not used. These can be obtained by writing to the State Supervisor of the appropriate service area.

## USE OF STUDY GUIDES

A considerable portion of the orientation period in Part-time Cooperative Training is needed to establish the fundamental procedures to be followed in using study guides. Most of all, it should be clearly emphasized to the student-learner that the purpose of a study guide is to assist him in acquiring the directly related information necessary for him to succeed and advance in his chosen occupation. It must also be emphasized that it is up to him to work consistently, at his best rate of speed, until he has completed each phase of his training. It should be recognized by all concerned, however, that the successful use of study guides in the Part-time Cooperative Training Program in any school will depend largely on the initiative, leadership ability, and planning of the coordinator.

The main purpose of directly related study guides (as it was conceived by Mississippi Coordinators, State Supervisors, and the Teacher Trainer in conferences at Mississippi State University) is to develop a medium through which effective directly related instruction can be given and properly correlated with job experiences.

It is understood that directly related instruction is that instruction which the student-learner should have to enable him to perform job skills efficiently and intelligently. It involves scientific and technical information, and step-by-step procedures and explanations concerning a given job or operation, all of which enable the student-learner to proceed in the performance of his work in an orderly, intelligent, and efficient manner. It must be correlated with job experiences as nearly as possible. Therefore, every effort must be made by the coordinator to keep study guides up to date.

### Student Orientation in Use of Study Guides

Some principles which will help in the orientation of student-learners in the use of the directly related study guides may be stated as follows:

> The directly related study guides are devices which may be used in guiding student-learners to sources of information related to their jobs; they are the keys to technical information needed by student-learners to advance on their jobs.
>
> The study guides establish a definite program of individual study directly related to work experiences; they provide media through which supervised and directed study can be effected in the diversified occupations represented in any one class.
>
> The directly related study guides furnish student-learners with guides to technical information concerning their jobs as they move from one operation to another. They provide for extra study and are helpful to the coordinator or supervisor in checking progress made by each individual student-learner.
>
> Finally, directly related study guides are time savers for both student-learners and coordinators. They furnish well planned procedures to follow in selecting study topics; they indicate materials needed for study; they are guides for those in charge of the purchase of reference materials; and they help to eliminate confusion, cross purposes, and undesirable behavior in the group.

Near the front of each directly related study guide there is an explanation regarding its use. Each publisher uses a slightly different format. One or more pages in each is devoted to "how to use" this study guide. This represents a suggested method which the coordinator may follow with his own individual alterations. Frequent references regarding the use of study guides are made throughout the remaining section of this handbook.

The following are current sources of study guides:

Agricultural Education
Teaching Materials Center
College Station, Texas 77843

Home Economics Instructional Materials Center
Texas Tech University
P. O. Box 4067
Lubbock, Texas 79409

Distributive Education
Instructional Materials Laboratory
Division of Extension
The University of Texas at Austin
Austin, Texas 78712

Texas University – Instructional Materials Laboratory
Industrial Education Department
Austin, Texas 78712

Trade and Industrial Education
P. O. Box 2847
University, Alabama 35486

Instructional Materials Laboratory
Room 8 – Industrial Education Building
Columbia, Missouri 65201

Instructional Materials Laboratory
1885 Neil Avenue
Columbus, Ohio 43210

California State Department of Education
Bureau of Publications and Textbooks
Sacramento, California 95814

## CORRELATION

The correlation of related instruction with the work experience on the job means the "tying-in" of directly related study with what the student-learner is doing on the job. The coordinator not only must "sell" students on the use of study guides–he must also teach how to use them. Jobs in the study guides should be assigned to students until they are capable of selecting their own assignments. Continuous checking will ensure that the classroom study is correlated with what the student is doing on the job.

Another method of correlating directly related study with work experiences is that of preparing the student in advance for new experiences on the job. The coordinator, during his contacts with an employer, can learn of new duties and responsibilities which the student-learner will soon be performing and make assignments in advance to correlate with these duties.

### Job Report Form

The printed form which follows is recommended as satisfactory for keeping the important record of work experiences, and is very useful in correlating instruction. The blank forms may be purchased reasonably from Johnson Printers, Corinth, Mississippi. They look very neat and add prestige to the student's record.

### Instructions for Using the Job Report Form

#### Section A

There are 12 lines for describing work experiences. For example, an auto mechanic trainee may have: (1) Cleaned and repaired a carburetor; (2) Adjusted a carburetor; (3) Replaced distributor points; (4) Adjusted distributor points; (5) Done trouble shooting; (6) Replaced wheel cylinder brake kits; (7) Relined brake shoes; (8) Balanced wheels; etc.–all of which are listed under "Work Experience on the job." The amount of time spent on the job–Monday through Saturday–should be recorded in quarter hours (¼, ½, ¾, 1, etc.). Some days a student might perform a variety of jobs. No experience should be recorded more than once on the form. At the end of the week, the student should total the amount of time spent on each performance or duty and then total the hours for the week. An item titled "miscellaneous" may be entered on the last line to account for time not otherwise assignable.

#### Section B

Sufficient space is allotted for listing the time the student checked in on the job, checked out, and the total time spent on the job daily. At the end of the week, the total hours spent on the job should equal the total hours from Section A. A date (Monday, for example) should be the beginning date of the work experience report. The coordinator places the grade for the week's work on the appropriate line. The blank, "Amount of Pay Earned," should be filled in by the student upon receipt of his wages. This might be on a weekly or monthly basis.

Section C

This section is devoted to assignments by the coordinator. Each day will carry the date, job number in the study guide, subject or title of the job, and references. Page numbers of references used should also be included.

The assignment sheet furnishes the coordinator with an easy and practical method of correlating directed study with work experience. A student should not be required to complete a "job a day" because of the varying amount of research required and because of individual differences involved. A better plan is to require complete treatment of the problem, regardless of the time required. Each coordinator should work out his own requirements for a week's work, based on the individual student and the nature of the problems involved.

Section D

This section furnishes the coordinator with ample space for any comments, suggestions, or remarks pertaining to the student's work for any particular day, or for the week, or for future work.

(Student's Name) (Occupation) (Employer)

## SECTION A

| WORK EXPERIENCE ON JOB | M | T | W | T | F | S | TOTAL TIME |
|---|---|---|---|---|---|---|---|
| 1. | | | | | | | |
| 2. | | | | | | | |
| 3. | | | | | | | |
| 4. | | | | | | | |
| 5. | | | | | | | |
| 6. | | | | | | | |
| 7. | | | | | | | |
| 8. | | | | | | | |
| 9. | | | | | | | |
| 10. | | | | | | | |
| 11. | | | | | | | |
| 12. | | | | | | | |
| TOTAL HOURS FOR WEEK | | | | | | | |

## SECTION B

| DAYS | TIME IN | TIME OUT | TOTAL DAILY |
|---|---|---|---|
| MON. | | | |
| TUES. | | | |
| WED. | | | |
| THUR. | | | |
| FRI. | | | |
| SAT. | | | |
| TOTAL HOURS | | | |

Date (Monday)____________

Coordinator's Grade ____________

Amount of Pay Earned ____________

## SECTION C –*ASSIGNMENT SHEET*

MONDAY:

Date ______________________ Job No. ______________________

Subject: ______________________

References: ______________________

TUESDAY:

Date ______________________ Job No. ______________________

Subject: ______________________

References: ______________________

WEDNESDAY:

Date ______________________ Job No. ______________________

Subject: ______________________

References: ______________________

THURSDAY:

Date ______________________ Job No. ______________________

Subject: ______________________

References: ______________________

FRIDAY:

Date ______________________ Job No. ______________________

Subject: ______________________

References: ______________________

## SECTION D – *TEACHER'S COMMENT*

______________________

______________________

______________________

Varied Instructional Methods

The section entitled "Use of Study Guides" (page 41) explains the major activity that should take place during the directly related instruction period. During orientation, students are taught how to record on-the-job experiences, select related-study guide experiences, and prepare study guide assignments. However, the coordinator should be aware of the disadvantages of exclusive use of study guides–any set routine will become boring and monotonous to students.

The following may be used by the coordinator to inject some variety into this period of instruction:

A. Oral or written reports by each student on the history and operation of training agency by which he is employed. These might include information such as:
   1. Number of years in operation–founders and early history
   2. Ownership(s)
   3. Number of employees–classified according to occupations
   4. Function of establishment in business or industrial world
   5. Exhibit of materials made, types of work done, working models, etc.

B. Reports on trips, conferences, and conventions–oral and/or written
   1. Industrial visitations
   2. Employee training conferences
   3. State Club Meetings (Permit photography hobbyists to show slides and/or photographs made during trip.)

C. Written autobiographies and/or preparation of a folder or scrapbook entitled "All About Me" which may be used by the student in the future as he needs information regarding dates of employment, names of immediate superiors, etc.

D. Scrapbooks

E. Supplementary reading assigned by employers
   1. Trade and/or professional magazines (often provided by employers)
   2. Book reports (on books recommended and/or provided by employers)

F. Special reports may be made orally or written on subjects such as:
   1. Why I Selected My Occupation
   2. What is New in My Occupation
   3. My Future on My Job
   4. If I Were My Boss
   5. History of Cooperative Education
   6. Hazards of My Occupation
   7. Why Stay in School

G. Discussion of current events and their impact on workers
   1. Acts of Congress and laws passed by Mississippi State Legislature
   2. Activities of Agricultural and Industrial Board and area development committees in bringing new industries to Mississippi
   3. Role of labor unions in the world of work
   4. Status and provisions of "right to work" laws

## INDIRECTLY RELATED INSTRUCTION

Indirectly related information for student-learners is classified as knowledge that all persons going to work in any occupation should have. It may not be considered essential to enable an individual to perform the manipulative skills on the job, but possession of indirectly related information does create confidence and job pride, enabling one to work with a greater degree of intelligence and satisfaction. It is said that 80%–90% of those losing their jobs do so because of unacceptable personal traits and characteristics rather than because of inability to perform required work.

Indirectly related instruction gives the coordinator an opportunity to use a wide variety of teaching procedures: reading assignments, lectures, oral reports, buzz sessions, panel discussions, visiting speakers, radio, TV, visual aids (blackboards, charts, film strips, and sound movies), bulletins, demonstrations, and business and industrial visitations.

If the local situation provides for two related class periods per day, one period should be devoted to indirectly related instruction. However, if the local situation provides for only one period of related instruction per day, at least two class periods per week should be devoted to this type of related instruction.

More effective teaching and use of time result if the indirectly related instruction is presented in units, such as a unit on desirable work habits and attitudes, a unit on legal information, etc. In introducing these units or subjects, the coordinator must properly orient students by explaining the purpose, reason for, and use of the information. In other words, he must "sell" the students on each unit and try to make each as interesting as possible. Since education is considered a gradual learning process resulting in growth and changed behavior, the indirectly related instruction will have better results if it is carried on as a continuous learning process throughout the school year.

Following are some recommended subjects to be studied by the students during the school year:

> Orientation will require more time in this program than in regular high school subjects. (Many recommend a minimum of ten class hours.) New students, especially, need to acquire considerable information as soon after schools opens as possible. The coordinator should explain the operation of the local Part-time Cooperative Training Program, the philosophy underlying it, classroom regulations, and general procedures. All students, whether placed on the job or not, should be taught how to make application for employment covering phases such as: writing letters of application, preparing data sheets, making appointments for interviews, presenting cards of introduction, and making follow-ups. This information is essential to the students not placed, and will be helpful later to those already placed. It is only human for students to want to know what will be expected of them. This period, during the first few days (or even weeks) of school, provides the coordinator with the opportunity to explain the grading system for both related instruction (directly and indirectly) in school, and employer evaluation on the job. Lectures, films, discussions, and preparation of written materials are suggested techniques of instruction for use in providing information described above.

Desirable work habits and attitudes create respect for and understanding of teacher-student relationships which may be enhanced and deepened daily, not only in the vocational classroom, but in all other classes as well. Students should realize that desirable habits and attitudes are basic to success, and practice in such at school is good practice for what is required on the job. Suggested topics to be covered include personality development, personal qualities, and mental, physical, and emotional habits. The coordinator may use many teaching procedures in developing this phase of training which is so vital to the total personal development of students.

Employer-employee relations include school-trainee relationships with his employer and should be developed to cover relations from the standpoint of a full-time worker also. It is suggested that the coordinator develop, or have developed, topics such as: "What the employer expects from the employee," "Desirable habits and attitudes," "Loyalty," and "A day's work for a day's pay." Then reverse the situation to cover: "What the employee has a right to expect from the employer," "Promotions," "Retirement," "Appropriate working conditions," and "Job Security." Employers may be used as guest speakers to develop some of these topics. Panel discussion in which employers and students participate is another interesting technique which might be used here.

Legal information should help clarify the reason why the coordinator must be careful to abide by any federal and state laws pertaining to businesses involved in interstate commerce and those classified as hazardous occupations. Child labor laws, wage and hour regulations, student-learner certificates, and workmen's compensation (a Mississippi law) should be explained to and understood by each student. An explanation and discussion of the purpose and operation of organized labor should be presented. Another legal aspect that is a "must" is withholding taxes–income taxes and social security. The coordinator should explain the filing of income tax returns for a calendar year on total earnings and exemptions. Information on these subjects may be secured from the State U. S. Department of Labor Office, Social Security Administration, and Director of Internal Revenue. (In some instances it is good public relations to ask representatives of these agencies to meet with the students and explain their programs.)

Health and hygiene should be stressed from the standpoint of diet, rest, posture, and recreation. Personal grooming and personal hygiene for business and pleasure should be included. (Some excellent films on these subjects are available from the film library of the Missississippi State Board of Health.) (Here, too, it is good public relations to invite guest speakers who represent clothing stores, beauty parlors, medical professions, etc.)

Club activities present students enrolled in the Part-time Cooperative Program a medium through which they may participate in professional, social, and recreational functions missed during the regular school program because of their part-time job training. All programs should provide this opportunity for students by organizing local clubs. Unless one already exists, a club constitution should be developed and adopted. In addition to providing social and recreational activities, the club offers an excellent laboratory for the practice of parliamentary procedure and helps the student recognize the value of organized activities so he will be informed about and interested in activities of civic clubs which he may some day be invited to join. It offers an avenue for developing good public relations through various club programs and projects. An annual employer-employee banquet is often the only public relations banquet in the entire school.

Parliamentary procedure is learned primarily as students participate in club activities, but a special unit may be taught as needed. There are several references available for use in teaching fundamental principles of parliamentary procedure, steps in making a motion, types of motions, making nominations, voting, etc. Prentice-Hall Book Company publishes an excellent book on parliamentary law adopted from Robert's Rules of Order.

Occupational information is important even though students have selected and entered training for an occupation. Emphasis should be placed on occupations in the community, possible effects of automation, occupational trends, possibilities for promotion, desirability of continued education (including part-time and evening classes), expansion of business and industry in the local area, etc. Representatives of Mississippi Employment Service Commission can be most helpful in meeting with the students.

Safety is defined as freedom from hurt, danger, injury, or risk. Time may be well spent on this subject, covering safety in the school, in the home, and on the job. Some firms have safety engineers who will welcome the opportunity to meet with the students and discuss their programs.

Vocabulary improvement may combine three areas that are recommended as a continuous teaching process to be used in both directly related instruction and all subjects covered in indirectly related instruction. Speech training may be practiced by giving oral reports. Considerable emphasis should be placed on the "art of listening" since most employers give oral instructions and students need to increase their ability to listen to, understand, and follow directions.

Business and social etiquette is a subject on which time may be well spent during the indirectly related instruction period. There are many new books in this general area. Role playing is a good technique to use in this unit.

Business and social relations and an explanation of the differences might prove valuable to the young neophytes of the business world.

Additional subjects a coordinator may desire to cover during the indirectly related periods of instruction are: General Business Training, Business Law, Business Arithmetic, Business English, Telephone Techniques, and Library and Reference Materials. A coordinator should study his local situation and local curriculum before attempting to dwell on any of these subjects except, perhaps, telephone technique. Some schools offer one or two semester courses in which these areas are covered either in part or quite adequately. Coordinators should study carefully the students' personal data sheets to determine the extent to which some of these subjects are being or have been studied. When duplication is noted, it is recommended that the coordinator alter the program of topics to meet individual needs. Brief descriptions of the above mentioned units of instruction follow:

> General business training could include information on the free enterprise system, record keeping, filing, economics, government, etc. This information would certainly increase the student's knowledge of the business world and help him progress toward becoming a well-rounded citizen.
>
> Business arithmetic or practical mathematics is sometimes essential in this training. If possible, instruction in this field should be provided to meet needs as determined by studying the results of a standardized test in this area.
>
> Business English has become an English elective for seniors in some high schools which offer the Part-time Cooperative Training Program. Most part-time cooperative students enroll in this course since it seems to meet their needs best. If the course is not offered in the regular curriculum, a coordinator should certainly review fundamentals of English grammar and business letter writing.
>
> Telephone technique is very desirable in training for some occupations. Some time might be spent in teaching how to receive and place local and long distance calls, facts about toll charges, etc. Proper telephone habits and manners and use of the telephone directory will be helpful to all students.
>
> Library and reference materials and their proper use is essential to the student-learner if he is to use study guides effectively during the directly related study period. This should be offered early in the school term and can be presented rather effectively through film strips based on the Dewey Decimal Classification System. Most school and/or public librarians welcome an opportunity to conduct short courses in the use of library materials.

Indirectly related materials should be organized in such a manner as to correlate best with the needs of the majority of student-learners.

In addition to, and as an expansion of the above material, one recent revision offers a coordinator and students even more resource material with which to work. Listed below are twelve units of instruction. These materials may be requested from the Curriculum Coordinating Unit, Mississippi State University, Drawer DX, State College, Mississippi 39762.

List of Units for Indirectly Related Instruction

I. Employer-Employee Relations
II. Personality Development
III. Human Relations
IV. Psychology
V. Parliamentary Procedure

VI. State and Federal Laws
VII. Money Management
VIII. Job Application and Interview
IX. Business Law
X. Business Ethics
XI. Citizenship
XII. Health

## EVALUATING THE COOPERATIVE PROGRAM

Evaluation can be defined as the process of gathering information and making judgements, based on this information, about the extent to which the educational goals of each segment of a program are being attained. As such, evaluation is a tool that should be used by the coordinator. Almost every decision concerning the cooperative program should be based on some type of formal or informal evaluation.

That evaluation should be an integral part of any educational program is now almost universally accepted. Both the Vocational Education Act of 1963 and the amendments of 1968 provide for and require evaluation of vocational education programs.

Each coordinator should devise a well planned process of evaluation. This plan should be continuous and provide for evaluating every phase of the cooperative program. The process for selecting students and training stations could be a part of evaluation. Southern Association of Secondary Schools and Colleges Evaluations, evaluation by the Vocational and Technical Division of the State Department of Education, and others may be included as a part of the process. The following criteria for evaluation is an example of one method of evaluating the instructional program.

## CRITERIA FOR EVALUATION

"Anything worth doing is worth doing well." This one statement might be said to be the basis of this section of the coordinator's handbook.

An attempt has been made to set up a rating sheet whereby the coordinator, or any other interested person, may rate the effectiveness of the related instruction.

The list of questions are to be answered either "Yes," or "No" on an objective basis.

After the questions have been answered, rate the related instruction as follows:

90–100 questions answered "Yes" – Superior
80–90 questions answered "Yes" – Good
70–80 questions answered "Yes" – Fair
Below 70 ------------------ Inferior or Poor

It is believed that if a coordinator will rate the related instruction through the use of the following questions at regular intervals during the training period, he will be able to strengthen his program.

It may be desirable to have someone else do the checking to secure an unbiased rating. Self-evaluation, however, is highly desirable and will enable the coordinator to identify and correct weaknesses which might not otherwise be noticed.

| | | YES | NO |
|---|---|---|---|
| I. | Physical facilities, layout, and location of related subjects classroom | | |
| 1. | Is the seating arrangement sufficiently flexible for the needs of the group? | ____ | ____ |
| 2. | Is the classroom located in the high school building? | ____ | ____ |
| 3. | Is the classroom comparable to other classrooms? | ____ | ____ |
| 4. | Does the classroom present a neat and business-like appearance? | ____ | ____ |
| 5. | Are the chalkboard and bulletin board used as teaching aids? | ____ | ____ |
| 6. | Is the library of the department sufficient to supply the working needs of the students? | ____ | ____ |
| 7. | Is the library material so arranged that it is easy for all students to use with least amount of confusion? | ____ | ____ |

|  |  | YES | NO |
|---|---|---|---|
| II. | Correlation of related instruction with job experience |  |  |
| 1. | Are there definite plans for the correlation of related instruction with job experiences? | ____ | ____ |
| 2. | Is the job experience clearly described and recorded daily on an acceptable report form? | ____ | ____ |
| 3. | Is the job experience report used as a tool for the correlation of job experiences with related instruction? | ____ | ____ |
| 4. | Is there a definite plan for the selection of supplemental related problems? | ____ | ____ |
| 5. | Is there a definite plan being used for checking and evaluating completed problems? | ____ | ____ |
| III. | Use of the study guide (directly related instruction) |  |  |
| 1. | Is there a plan being used whereby the study guide progress record shows the progress of the student on the job and in related subjects? | ____ | ____ |
| 2. | Do the progress record sheets of the study guide become a part of the permanent record of each student? | ____ | ____ |
| 3. | Does the student regard the study guide as being an aid to research concerning problems related directly to his job? | ____ | ____ |
| 4. | Has the study guide been "sold" to the student as a tool that will aid him in acquiring information properly coordinated with his daily activities? | ____ | ____ |
| 5. | Does the student have a thorough understanding of how the study guide is to be used? | ____ | ____ |
| 6. | Has the student been taught to exercise his initiative and originality in solution of problems listed in the study guide? | ____ | ____ |
| 7. | Has the student been given a method of attacking the jobs and problems which are included in the study guide? | ____ | ____ |
| 8. | Is there a definite provision made for storage of the study guides when not in use? | ____ | ____ |
| 9. | Is the employer kept informed of the work done by the student with use of the study guide? | ____ | ____ |
| 10. | Is progress in the study guide kept accurately and up-to-date? | ____ | ____ |

| | | YES | NO |
|---|---|---|---|
| IV. | Reference materials and supplies | | |
| 1. | Is there ample reference material provided for each occupation in the program? | ____ | ____ |
| 2. | Are the recommended test keys for each study guide provided? | ____ | ____ |
| 3. | Is the available reference material up-to-date? | ____ | ____ |
| 4. | Are the student's personal belongings, including notebooks, study guides, and supplies, kept in a systematic way? | ____ | ____ |
| V. | Indirectly related instruction | | |
| 1. | Does the approach to each indirectly related problem challenge the student's initiative? | ____ | ____ |
| 2. | Is student participation encouraged in the class discussion? | ____ | ____ |
| 3. | Is there an organized plan for selecting appropriate indirectly related subjects? | ____ | ____ |
| VI. | Techniques in directed student research | | |
| 1. | Is there a plan whereby the employer might help in selecting related subjects and materials? | ____ | ____ |
| 2. | Are local businessmen used as authoritative sources of information? | ____ | ____ |
| 3. | Is there a plan in effect to determine student interests and needs when it is necessary to make supplemental assignments? | ____ | ____ |
| 4. | Can the coordinator determine the student's ability and interests from records and previous tests given? | ____ | ____ |
| 5. | Are students taught how to use the library properly for research? | ____ | ____ |
| VII. | Methods of checking notebooks and written work | | |
| 1. | Are definite objectives set up for notebook work, in both directly and indirectly related instruction? | ____ | ____ |
| 2. | Are notebooks checked for these objectives? | ____ | ____ |
| 3. | Do the students understand the procedure for accomplishing these objectives. | ____ | ____ |

| | | YES | NO |
|---|---|---|---|
| 4. | Do the students help determine the purposes of their projects? | ____ | ____ |
| 5. | Do the students understand the coordinator's methods of checking written work? | ____ | ____ |
| VIII. | Testing techniques | | |
| 1. | Is ample opportunity given students to express themselves orally as well as in written reports? | ____ | ____ |
| 2. | Are the written tests adequate to measure technical knowledge? | ____ | ____ |
| 3. | Are the tests objectively scored? | ____ | ____ |
| 4. | Are the tests objective in nature? | ____ | ____ |
| 5. | Is the student given ample opportunity to express his knowledge of his job? | ____ | ____ |
| 6. | Is there a method by which actual job and technical knowledge may be measured? | ____ | ____ |
| 7. | Is actual technical knowledge measured in the final examination? | ____ | ____ |
| IX. | Classroom activities | | |
| 1. | Are students given a chance to report actual job activities to the class? | ____ | ____ |
| 2. | Is instruction for each occupational group carried on by the coordinator? | ____ | ____ |
| 3. | Are conferences held by the coordinator with each student? | ____ | ____ |
| 4. | Is each student assigned definite responsibility for classroom activities? | ____ | ____ |
| 5. | Are students made to feel responsible for the appearance of the classroom? | ____ | ____ |
| X. | Desirable student conduct in the classroom | | |
| 1. | Is there a business-like attitude in the classroom? | ____ | ____ |
| 2. | Is there an atmosphere of seriousness in the classroom? | ____ | ____ |
| 3. | Is work carried on until the close of the period? | ____ | ____ |

| | | YES | NO |
|---|---|---|---|
| 4. | Is work started with a minimum of lost time at the beginning of the class period? | ____ | ____ |
| 5. | Does the proper relationship exist between the coordinator and the class as a whole? | ____ | ____ |
| XI. | Instructional aids and their uses | | |
| 1. | Are the visual aids made available for the school used effectively by the coordinator? | ____ | ____ |
| 2. | Are occupational films used and follow-up instructions given? | ____ | ____ |
| 3. | Is the film schedule worked out at the beginning of the year? | ____ | ____ |
| 4. | Are all films previewed by the coordinator before being shown to the class? | ____ | ____ |
| 5. | Are other faculty members invited into the class to listen to or participate in discussion? | ____ | ____ |
| 6. | Are outside speakers used as an aid in discussion groups? | ____ | ____ |
| 7. | Are up-to-date charts and pamphlets used in the classroom? | ____ | ____ |
| 8. | Is the school library used by students and coordinators as a means of additional information? | ____ | ____ |
| XII. | Handling fast and slow students in related study work | | |
| 1. | Is there a definite policy set up for meeting the needs of both the slow and rapid achievers? | ____ | ____ |
| 2. | Is an objective method used to identify the slow and rapid achiever? | ____ | ____ |
| 3. | Are regular conferences held between each student and the coordinator? | ____ | ____ |
| 4. | Are the rapid learners assigned enriching experiences to utilize their time to greatest advantage? | ____ | ____ |
| 5. | Is an effort made to determine causes of any slow progress? | ____ | ____ |
| 6. | Is the ability and interest of the rapid learner challenged? | ____ | ____ |
| 7. | Are slow learners given extra attention? | ____ | ____ |

| | | YES | NO |
|---|---|---|---|
| XIII. | Student written work–final form | | |
| 1. | Are students required to meet uniform standards in handing in written work? | | |
| 2. | Do the students understand these requirements? | | |
| 3. | Do the students know which part of the work handed in will become part of the permanent record? | | |
| 4. | Does the coordinator have a plan for checking written work to make sure that it meets requirements? | | |
| XIV. | Supplementary reading | | |
| 1. | Is there provision for supplementary reading? | | |
| 2. | Are students required or encouraged to read the newspaper daily? | | |
| 3. | Are reports on occupational information required from each student as a result of reading? | | |
| XV. | Personal development of the student | | |
| 1. | Is there a definite program for personality development? | | |
| 2. | Is there a method by which remedial personality instruction may be given? | | |
| 3. | Is a personality rating sheet used for each student? | | |
| 4. | Are students encouraged to initiate individual personal development programs? | | |
| 5. | Are tests given as a means of checking personality development? | | |
| 6. | Do employers aid in personality checks? | | |
| XVI. | Employer relationship with in-school work | | |
| 1. | Is there a plan whereby the employer may help determine appropriate related instruction? | | |
| 2. | Is there a method by which the employer is kept informed of the student's progress in school? | | |
| 3. | Is the employer encouraged to contribute to the directly related instruction other than on the job? | | |

| | | YES | NO |
|---|---|---|---|
| 4. | Is the employer well informed of the progress made by the student in both directly related and indirectly related study? | ____ | ____ |
| XVII. | Grading the co-op student | | |
| 1. | Does the student understand the process by which he will be graded? | ____ | ____ |
| 2. | Is the employer given a chance to contribute toward the student's related subject grades? | ____ | ____ |
| 3. | Is the student's grade a combination of the work done in class and on the job? | ____ | ____ |
| XVIII. | Miscellaneous | | |
| 1. | Does the program cover a representative group of occupations in which employment is available in the community? | ____ | ____ |
| 2. | Does the program have full support and cooperation from the school administration? | ____ | ____ |
| 3. | Does the program have full cooperation from other faculty members? | ____ | ____ |
| 4. | Is the attitude of other faculty members toward the related instruction wholesome and sympathetic? | ____ | ____ |
| 5. | Is the community fully aware of what the program is trying to accomplish? | ____ | ____ |
| 6. | Does the school feel that the related instruction period is accomplishing its purpose? | ____ | ____ |
| 7. | Is the general feeling of the student body one of respect for the Vocational Training Program? | ____ | ____ |
| 8. | Is there a publicity program in practice? | ____ | ____ |

## INSTRUCTIONAL AIDS AND THEIR USES

Visual aids are essential to efficient instruction. Film strips, 16mm films, chalkboard illustrations, photographs, charts, models, and other devices enable an instructor to arouse and hold the attention of students so that learning is accomplished swiftly, efficiently and thoroughly.

Visual devices are powerful tools in the hands of an efficient instructor. Words, both written and oral, are often inadequate to convey meanings, understandings, attitudes, and appreciations to the minds of the students. Pictorialization frequently succeeds when words fail. Since more people see alike than hear or read alike, the skillful use of visual aids is essential to efficient educational processes.

Skill is required to use visual aids efficiently and effectively. The coordinator must use the right kind of visual aid for each unit, topic, or subject. The material used must be simple so that the trainee can grasp the essentials. Up-to-date visual aids must be used at the right time and in the right way.

Visual aids combined with good textbooks and a competent instructor form an unbeatable combination. Various aids are explained as follows:

A. Motion Pictures. One of the most important visual aids is the motion picture projector and properly selected film. It is unfair to trainees to show a film merely to take up time. Each presentation should have a definite training objective, which usually is to explain and clarify a specific job problem. The instructor should check through his training plan and place the date and title of his film in a visual aid column. He should order the film well in advance to assure delivery on time (and return it promptly according to schedule).

   When showing films, the following steps should be kept in mind:

   1. Preview the training film.
   2. Set up projector and screen (and have extra bulb available).
   3. Check lighting.
   4. Prepare trainees for viewing of the film.
   5. Check seating.
   6. Present film and instruction.
   7. Follow film with questions, discussions, and interpretations.

B. Slides. Another very effective visual aid is the slide. A few carefully selected slides, or even one pertinent slide can:

   1. Attract attention.
   2. Arouse interest.
   3. Assist job development.

C. Opaque Projector. The opaque projector is the simplest and easiest to use of these visual aids. An enormous amount of free and inexpensive material is available for use in this projector. Transparency is not necessary; any picture, photograph, cartoon, drawing, magazine illustration, textbook page, fabric, or other small object may be used. The daily newspaper and popular magazines supply a wealth of materials.

D. Maps, Charts, Graphs, and Diagrams. Maps, charts, graphs, and diagrams have been named the "spark plugs" of visual training because they are easy to make and are effective devices for training purposes. Extensively used in every type of industrial organization, by business concerns, and in many fields of job training, these instructional aids make dry and often meaningless facts more understandable and interesting.

E. Posters and Manuals. Excellent projects may be developed by encouraging students to prepare posters on specific training problems in which they are interested. Allow sufficient time to collect the material, and then permit them to present and interpret their productions to the group. Posters may show charts, graphs, diagrams, maps, cartoons–in short, anything that will help present the facts or emphasize the subject.

F. Pictures and Photographs.

1. Uses
    - a. Arouse interest.
    - b. Introduce new subjects.
    - c. Illustrate specific steps in the job.
    - d. Build good job attitudes.
    - e. Develop appreciation.
    - f. Test trainee's knowledge
    - g. Review units of subject matter.
2. Sources

    Advertisements, leaflets, brochures, and other booklets received through the mail are all potential sources. The fashion magazines, such as *Vogue, Harper's Bazaar,* and *Mademoiselle,* provide excellent illustrations, not only for style and design, but for many other related fields. In addition, there are magazines for all special fields of manufacture, commerce, and the professions.

    Permit students to create their own pictures or take their own photographs illustrating:
    - a. On-the-job activities.
    - b. Classroom projects.
    - c. Store and plant projects and displays.

G. The Chalkboard. The chalkboard is probably the most universally used visual aid. Properly used, it may be of tremendous value in all kinds of teaching.

H. The Bulletin Board. A bulletin board is a good visual aid when used to arouse the trainee's interest, to develop efficiency, and to follow up chalkboard work and other visual aids. Again, permit students to use their own creativity by their being responsible for attractive bulletin board arrangements.

Suggestions for system in use of bulletin board:

1. Collect suitable illustrations for instructional projects or problems.
2. Classify and file material for use at the right time.
3. Select illustrations pertaining to the specific subject or area under consideration.

4. Arrange illustrations on bulletin board in an interesting manner.
5. Prepare a title and brief description.
6. Use color harmony and balance.
7. Exhibit or refer to bulletin board pictures during instruction time.
8. Encourage trainees to observe and contribute to the bulletin board.

Bulletin boards may be made of cork, soft wood, burlap, monk's cloth, heavy brown wrapping paper, masonite board, celotex, or numerous other fiber boards Cork is preferable, but the others are also suitable. Add color by occasionally painting the board with water-paint in pastel colors.

The size of the bulletin board will depend upon the size of the room. It should be placed at least three feet above the floor in an area that is well lighted at all times. Some departments have created interest on the part of the entire student body by maintaining attractive bulletin board displays in the hall—just outside the classroom door.

I. Objects, Specimens, and Models. These training aids are interesting devices which can bring into play all five senses—touch, sight, hearing, smell, and taste. An instructor who capitalizes on as many of these senses as possible increases the efficiency of his training proportionately.

First, utilize the sources in your own organization or community. Local merchants, manufacturers, and processors usually extend their full cooperation in an effort of this type. After exhausting the possibilities in the local training area, contact outside concerns that use, collect, manufacture, process, or sell the material required for a specific training job.

Each branch office of the National Cash Register Company is equipped with a complete set of store models; these are used chiefly to assist merchants in store layout, but may also be used advantageously in other phases of training.

J. Field Trips. Not only does a trip make possible close observation of a multitude of natural and man-made things, but it also offers an opportunity for planned inspection of administration, organization, and procedures in many fields. A trip provides trainees with first-hand information and real experience in a real life situation. It definitely contributes to an appreciation of the dignity of work and the contributions made by each worker to the welfare of all.

When considering the use of visual aids, one should be aware of the many available sources. Visual aids are distributed by manufacturers, producers, processors, distributors, service groups, local schools, colleges and universities, federal government departments and agencies, state government departments and agencies, libraries, churches, museums, associations, and commercial dealers throughout the country.

These aids may be purchased, rented, or borrowed. In many cases, they are made available free of charge with the user paying the cost of transportation. Sometimes, distribution is limited to local or state areas; however, the majority of these aids are available on a national basis.

## PHYSICAL FACILITIES AND LAYOUT

The classroom should be located in the high school building if possible. If the classroom is separated in any way, it tends to set the cooperative education students apart from the regular school. From the personal standpoint of the coordinator, it might appear advantageous to hold classes in a separate building, or to be in one with other vocational teachers. However, it could prove to be most detrimental to the cooperative program. After all, the cooperative program is scheduled to fit the regular academic program rather than the shop schedule.

### Size of Classroom

There are usually from 20 to 35 students enrolled in the part-time cooperative classes, depending on the size of the town or city. Due to the fact that in cooperative education, related subjects should be taught on both an individual and group basis, a larger area of working space is desirable and necessary than is required for instruction in conventional subjects. Floor space of 25 to 35 square feet per student is needed in order to permit adequate instruction, systematic arrangement, and storage of instructional materials (appendix M).

### Classroom Facilities

The size of the related subjects classroom will largely determine the facilities and equipment which may be used effectively. Every related subjects classroom should have sufficient light and adequate window space. The window space should be sufficient for both lighting and ventilation. If the school or department has a movie projector or other visual aid equipment, the windows should be equipped to permit darkening of the room. It is recommended that dark curtains, venetian blinds, or black shades be used.

Equipment necessary in the classroom includes:

1. Work tables and chairs
2. Teacher's desk and chair
3. Typewriter with table and chair
4. One or two four-drawer filing cabinets
5. Chalkboard
6. Bulletin board
7. Cabinet facilities and book shelves for magazines and other instructional materials

Because of the nature of the work, especially the directed study period, tables and chairs are preferable to arm chairs or desks. The use of tables and chairs permits occupational group study. The tables should be 30 in. x 36 in. x 72 in. The chairs should have a smooth finish and be designed for comfort.

It is necessary that a typewriter be provided with table and chair. The coordinator has numerous reports and forms to prepare. If possible, the typewriter should have elite type with a 14-in. carriage.

Two four-drawer filing cabinets are necessary in order to file reports, correspondence, permanent records, bulletins, and instructional materials. In a small program one such file cabinet might be sufficient. At least one cabinet should be the lock type.

Sixty square feet of chalkboard is recommended as a minimum.

The bulletin board should be much larger than is usually provided for an academic classroom. Preferably, the room should be equipped with two bulletin boards–one for current and school activities, and another for teaching aids. The former should be 30 in. x 36 in. and the latter 30 in. x 48 in.

The drawing on page 107 is a suggested space layout for this type program. The conference-type table and seating arrangement is preferred to a standard classroom arrangement.

Some accessories may be included for greater convenience. If the coordinator has a private office, he can talk with a student in privacy, as well as confer with parents, employers, and other visitors in a business-like atmosphere. It is recommended that coat racks for the students be provided. A telephone should be installed if there is an office; a telephone in the classroom is questionable.

# SECTION III – CLASSROOM AIDS

## REFERENCE MATERIALS AND SUPPLIES

Other factors being equal, the quality of a cooperative education program is determined largely by the effectiveness of the technical and related information available in the classroom. Too much emphasis cannot be placed on the value of a classroom library. In order to do justice to any program, a coordinator and students must have ample reference materials and supplies on hand at all times.

It is the duty of the coordinator to see that essential and desirable classroom instructional materials and supplies are provided. Failure to do so creates a real problem for the coordinator as well as for the student. Therefore, it is essential that the coordinator annually makes a careful study of the reference materials and supplies needed by the students for that year and calculate the costs involved.

Reference materials and supplies should be secured just as soon as the coordinator has determined the occupations for which each student is to be trained and the training agency which will provide such training.

### Study Guides

From the list of sources on page 42, order the study guides available for the occupations engaged in by part-time cooperative students.

### Recommended References and Texts as Indicated by Study Guides

In the back of each study guide will be found a bibliography of basic texts and references. There is usually also a list of supplementary texts and references which are recommended, but are not absolutely essential. Using the bibliography in each guide, coordinators may order from the publishing companies listed the books and materials required for each occupation. Some of the listed texts may be out of print. However, these may be replaced by new editions and/or similar texts by other authors and publishing companies. It is recommended that students, under the direction of the coordinator, do the actual research necessary when a substitution of text is made.

In those occupations for which no study guides are available, contact the following sources for materials, aids, and suggested lists of materials:

1. Other coordinators
2. Curriculum Coordinating Unit, Drawer DX, Mississippi State University, State College, MS 39762.
3. State Supervisor of Cooperative Education, Box 771, Jackson, MS 39205
4. Local or public school librarians
5. State Supervisor of Vocational Guidance, Box 771, Jackson, MS 39205
6. Employers of students
7. Chambers of Commerce

8. U.S. Office of Education, Washington, D.C. 20000
9. Publishing companies (which provide new textbook announcements, free materials, and pamphlets
10. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
11. Mississippi Employment Security Commission, Jackson, MS 39205
12. Occupational Outlook Service, U.S. Department of Labor, Washington, D.C. 20025
13. Guidance Division of Instruction, State Department of Education, Box 771, Jackson, MS 39205

# VOCATIONAL GUIDANCE

# VOCATIONAL GUIDANCE

## Philosophy

Students are confronted with increasing demands for educational, career and social competencies. Guidance should be a key factor in helping students to obtain maximum benefits from their educational experiences and in motivating students to identify relationships among these educational experiences, the world of work, and the demands of society. Comprehensive and continuous vocational guidance services should be built around a conceptual framework which includes the following services: information; appraisal; selection and admission; counseling; coordination; job placement; evaluation and research, including follow-up. These guidance services should be designed to help students to become aware of their potential, to take advantage of available educational and career opportunities, to become aware of the world of work, and to accept the responsibility for personal decisions.

## Objectives

1. To assist students in understanding and accepting themselves.
2. To assist students in developing a positive self-concept and a sense of values which will aid them in becoming meaningful contributors to society.
3. To identify and encourage the enrollment of students who may profit from vocational education.
4. To assist students in selecting and pursuing an appropriate program of vocational instruction.
5. To provide up-to-date information concerning individual development, the world of work and educational opportunities.

6. To assist students in selecting a post-high school education that best suits their needs, abilities and interests.
7. To aid students in vocational placement.
8. To administer an appropriate comprehensive testing program.
9. To assist with follow-up studies of former vocational students, graduates, and dropouts.
10. To work with administrators, counselors, and vocational teachers in providing for orientation of students relating to vocational offerings of the school.

Description

The vocational guidance counselor plays a complex and vital role in the preparation phase of career education. Skill development is identified with and is included in the preparation phase of career development. As an individual develops a vocational skill, he is enriching one aspect of personal development. The vocational counselor in the Jones County schools provides five basic services: (1) Vocational and career information, (2) Assistance with personal and social problems, (3) Administration of appropriate testing programs, (4) Assistance with placement of vocational students, and (5) Assistance with a five year follow-up program.

Individual conferences are held with students to aid them in determining academic and tentative vocational needs. These conferences are followed by group conferences in which resource people, filmstrips and special speakers bring career information to students.

A comprehensive testing program that includes various types of interest, ability and achievement tests is administered and interpreted to the students by the counselor. He arranges for other batteries of tests to be given upon individual request or when he identifies a need for special tests. He also assists in placing students as students make decisions to further their education in a technical school, junior or senior college or university, or to terminate their education with a vocational training program and enter the world of work. He makes accessible to students, career and vocational reference files, tours to training facilities and industries, information about military service, college resource materials, available financial aid for educational purposes, and higher education personnel.

The counselor serves as a liaison between administrators, faculty and parents. He provides teachers with cumulative information on each student; acts as a resource agent in helping parents communicate with their children; maintains a cooperative working relationship with agencies, businesses and industries in the community; and acts as a consultant to members of the administrative staff. The role of the vocational counselor in Jones County is truly a role of service, and the vocational guidance program is future-oriented.

## Techniques

The techniques used in individual counseling with the student will vary with the individual and with his problem or his request. The techniques used in group counseling will vary according to the purpose of the group session.

## Method of Evaluation

Follow-up of students is the method of evaluation used in an attempt to discover the value of the skill and academic training that was offered in the teaching/learning environment in the Jones County schools.

## Academic Course Offerings

1. Art
2. Driver Education
3. English
4. Foreign Languages
5. Guidance
6. Health and Physical Education
7. Home Economics
8. Industrial Arts
9. Music
10. Mathematics
11. Science
12. Social Studies

# Introduction

## Academic Curriculum

As a result of the combined efforts of the administration, guidance counselors, faculty and student body of the Jones County schools, a curriculum has been developed that attempts to meet the needs of all the students enrolled in the Jones County schools.

It is felt by all concerned that the gifted student should be challenged and the slow learner should be encouraged. The school strives to offer adequate learning experiences to the college bound student, the vocationally inclined student and the student whose education will be terminated on or before graduation from high school. A desire to challenge all students to want to learn is a continuing goal.

The educational process in the Jones County schools provides for the academic, vocational, physical, social and spiritual development of the students.

## OBJECTIVES

1. To aid the student in developing an appreciation of moral, spiritual, cultural, and aesthetic values.
2. To encourage acceptable moral, social, and aesthetic values.
3. To provide a learning climate which encourages inquiry, self-discipline, and problem-solving methods leading to wise choices for the individual and society.
4. To offer courses required by the Mississippi State Legislature.
5. To offer courses needed to meet entrance requirements of colleges and universities.

6. To offer instructional requirements for library research.
7. To select teachers who are qualified in their major field.
8. To provide a basic curriculum which will enable every student to gain access to his chosen field upon his graduation.
9. To encourage the acquisition of attitudes and habits of good citizenship; to promote leadership ability and group understandings through clubs, councils, class organizations, and school elections.
10. To evaluate student achievement and provide guidance for meeting the present and future needs of the individual.
11. To motivate the student to enjoy creative thinking, to enjoy being creative, and to be proud of this ability.
12. To help the student to become an emotionally mature person, to find his place in the world, and to be better able to contribute to society.
13. To encourage the student to acquire skills and knowledge needed later in life in securing a better job and in having a happier, healthier life.
14. To encourage and develop a feeling of respect, understanding, and cooperation among student, home, school, and community.
15. To emphasize the duties and responsibilities which exist as a result of rights and privileges granted.

## Courses Offered

To receive a diploma from Jones High Schools, a student must have accumulated 18 units of credit. The units of credit specifically required of each student are the following:

| | |
|---|---|
| English | 4 units |
| Mathematics | 2 units |
| Social Studies | 3 units |
| Science | 2 units |

The science requirements may be two pure sciences or one unit from general science, biology, chemistry, general physical science or physics, and one unit from vocational agriculture or home economics. All graudates are required to have one-half unit in physical education.

The following units are available to students of the Jones County High Schools. These are sufficient to provide the selection necessary to meet the individual needs of each student.

| Tenth Grade | Credits |
|---|---|
| English II | 1 |
| Spanish I | 1 |
| French II | 1 |
| Fundamental Mathematics I | 1 |
| Fundamental Mathematics II | 1 |
| Algebra I | 1 |
| Algebra II | 1 |
| Unified Geometry | 1 |
| World History | 1 |
| General Science | 1 |
| Biology | 1 |
| Chemistry | 1 |
| Home Economics I | 1 |
| Home Economics II | 1 |
| Mechanical Drawing | 1 |
| General Business | ½ |
| Art | ½ |
| Band | ½ |
| Chorus | ½ |
| General Music | ½ |
| Drivers Education | ½ |
| Health and Physical Education | ½ |

| Eleventh Grade | Credits |
|---|---|
| English III | 1 |
| French II | 1 |
| Spanish I | 1 |
| Fundamental Mathematics II | 1 |
| Algebra II | 1 |
| Unified Geometry | 1 |
| American History | 1 |
| General Physical Science | 1 |
| Biology | 1 |
| Chemistry | 1 |
| Physics | 1 |
| Agriculture II | 1 |
| Agriculture III | 1 |
| Shop II | 1 |
| Mechanical Drawing | 1 |
| Family Living | 1 |
| Home Economics I | 1 |
| Home Economics II | 1 |
| Home Economics III | 1 |
| Shorthand I | 1 |
| Typewriting I | 1 |
| Bookkeeping I | 1 |
| Art | ½ |
| Band | ½ |
| Chorus | ½ |
| General Music | ½ |
| Health and Physical Education | ½ |

| Twelfth Grade | Credits |
|---|---|
| English IV | 1 |
| Journalism | 1 |
| Spanish I | 1 |
| French II | 1 |
| Fundamental Mathematics II | 1 |
| Algebra II | 1 |
| Unified Geometry | 1 |
| Senior Mathematics (Fused) | 1 |
| American Government | ½ |
| Economics | ½ |
| Challenge | ½ |
| Biology | 1 |
| General Physical Science | 1 |
| Chemistry | 1 |
| Physics | 1 |
| Family Living | 1 |
| Home Economics II | 1 |
| Home Economics III | 1 |
| Shorthand I | 1 |

| | |
|---|---|
| Typewriting II | 1 |
| Bookkeeping | 1 |
| Secretarial Training | 1 |
| Art | ½ |
| Band | ½ |
| Chorus | ½ |
| General Music | ½ |
| Health and Physical Education | ½ |

The following courses are taught when the demand warrants.

| | |
|---|---|
| French I | 1 |
| Spanish II | 1 |
| Problems in Democracy | ½ |
| Speech | 1 |

## Grading System

The grade for each six weeks is determined by allowing daily recitations and tests to equal two-thirds of the final grade; the six weeks' test accounts for the remaining one-third of the six weeks' grade. Semester averages are figured by using an average of the three six weeks' grades as two-thirds and the semester examination grade as the other third. The yearly grade is found by averaging the two semester grades. A yearly average of seventy or above is considered a passing grade. The grading system is as follows:

A -- Superior Work (94-100)
B -- Above Average (86-93)
C -- Average (76-85)
D -- Below Average (70-75)
F -- Failing (0-69)

There are two types of academic courses offered in the Jones County High Schools. One course is college preparatory with suggested courses in English, four units; mathematics, three units; science, three units; social studies, three units; and electives, four units. The other course is the general course of study which includes English, four units;

mathematics, three units; science, two units; social studies, three units; and electives, five units.

# ART

## Philosophy

Art courses should be offered to every student in Jones County High Schools, not just to students who are considered to be "gifted" or "talented." Courses should be designed to serve the aesthetic needs of the community and school as well as the individual student. Art can help all students to develop a keen awareness of the world around them. Art is the difference between seeing and identifying.

## Objectives

The function of art in education is to help the student in the following ways:

1. Conceive the world in plastic, visual terms.
2. Graphically express his own inner needs and attitudes.
3. Develop a strong sense of self-assurance through heightened mental and emotional experiences.
4. Discover the spiritual significance of formal order, proportionate harmony, and overall unity called beauty.
5. Develop a sensitivity to great works of art through undergoing the frustrating ordeal of trying to draw.
6. Penetrate to the essence of things and develop a scale of values.

## Description

Art is open to all senior high school students on an elective basis. It carries one-half credit for each course. The advanced art offers an opportunity and incentive for developing vocational and leisure-time activities. It develops talents and skills and forms a background for a more advanced study of art. Students develop qualities of originality, creativity, and artistic integrity.

Art appreciation is integrated into the organization of the class. Students trace the development of art from prehistoric times through the newest trends in the field.

Each student is given practical experience in many mediums. The aim is to give experience in each medium or technique for further development of vocational or leisure-time activities.

Techniques taught in advanced art are as follows: basic pencil drawings, charcoal, pastels, pen and ink, dry brush, watercolor, and oil painting. Added to these are the methods of paper mache, stitchery, weaving, batik, printing, collage, mosaic, construction, ceramics, and various forms of sculptural expression. The students are given the opportunity of designing and building the stage decorations for campus productions, as well as some advertising art.

Techniques

1. Lecture and discussion
2. Demonstrations
3. Films
4. Slides
5. Oral reports
6. Field trips to exhibits
7. Field trips to observe and draw

Methods of Evaluation

Evaluation procedure is based on a student's progress in the following:

1. Interest and observation
2. Problem solving in form, color, tone, texture and dimension

3. Accuracy and productivity in the available media
4. Use of books available in the art room
5. Class discussions of the art work done by the students
6. Understanding of the major periods in the history of art

Significant Features

1. The program aids students in becoming creative.
2. It aids in developing an awareness that all students have some creative ability.
3. It develops individual curiosity, creative thoughts, and expressions.
4. It encourages independent thinking and wise decision making.

# References

Abrams, Harry N. *Picture History of Painting*. New York, New York: Abrams Publishing Company.

Crosby, Sumner M. *Art Through the Ages*. New York, New York: Harcourt, Brace and Joanovich Publishing Company.

Janson, H. W. *History of Art*. New York, New York: Abrams Publishing Company.

Kenny, John B. *Ceramic Design*. Philadelphia, Pa: Clifton Publishing Company.

(Example-Fusion of Career Education into academic areas

CAREER COMPANION GUIDE

Subject & Grade Art, Grades 10-12 Text: Name Publisher Copyright

Career Objective: The student will draw abstract figures, compare the lines and shapes with cartoon characters, and draw and title an individual cartoon character.

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| Lines and Shapes | Cartoonist<br>Portrait Painter<br>Fabric Designer<br>Artist-illustrator<br>Commercial Artist<br>Sign Painter | Ask students to choose an abstract figure to use as a model, and have them sketch the shape. Provide comic books, newspapers and magazines for each student. Have students study the cartoon characters, attempt to draw them, and formulate an appropriate caption. On a piece of paper 2" by 6", have the students write one career that may be related to line drawing or other art principles. Hang these 2" by 6" pieces of paper to form a mobile. Have students read and discuss each job listed and explore in depth any area of interest. | Magazines<br>Comic Books<br>Newspapers<br>Funnypapers | Observation of art work displayed in the "Snake Pit," followed by individual discussion or class discussion with students. |

# DRIVER EDUCATION

## Philosophy

The main purpose of the driver education course is to train students to properly operate an automobile. Since accidents involving motor vehicles are among the leading causes of deaths and bodily injuries, there is a distinct need for such a course. Another purpose of the course is to motivate students to develop attitudes, knowledge, and skills as beginning drivers that will help them to become assets rather than liabilities on the road. The automobile can be a means of livelihood, a means of protection, and a means of pleasure. A student, well-trained in the basic fundamentals of driver education, demonstrates safety habits when driving, concern for his fellow men and a positive self-concept.

## Objectives

1. To help students develop respect for the automobile and the power it contains.
2. To aid students in obtaining a basic understanding of the function of an automobile.
3. To strive to change any bad or dangerous habits already learned by the older driver.
4. To encourage defensive driving habits and to stress courtesy, control, and concentration when driving.
5. To aid students in understanding the traffic rules and regulations.
6. To aid students in understanding that the roads are for public use and not for individual use.

7. To help students become aware of the necessity of social and moral responsibility as drivers.
8. To help students understand that the human element, rather than mechanical failures, is responsible for most of our accidents.

Description

Driver education is a regular part of the curriculum offered to any student in the 10th grade. In grades 11-12, students may enroll provided the classes are not overcrowded.

Students receive classroom instruction for the first twelve weeks of the first semester. This is followed by six hours of behind-the-wheel training. During the classroom phase, practical and important information is discussed concerning traffic laws, traffic signs, and driving practices. Each student, upon completing the course, receives one-half unit credit.

Techniques

Driver education is divided into three phases. The classroom phase includes sixty hours of textbook instruction which requires completion of the textbook, the Mississippi Driver's Handbook. The second phase consists of twelve hours in the simulator. The third phase consists of six hours of actual driving behind the wheel. Each student is given actual driving practice in city traffic; highway traffic; and various maneuvers, which include parking, weaving, backing, and turning.

Methods of Evaluation

1. Written quizzes
2. Oral discussion

3. Oral reports
4. Projects
5. Behavior

Significant Features

1. All students are taught the proper attitudes toward safe driving.
2. All students are properly prepared to take the driving examination from a state patrolman.
3. Students are given reaction tests before entering the car.
4. All students receive instruction from a qualified teacher.
5. The car, furnished by a local car dealer, has dual controls and all necessary safety devices.

Textbook:

Mississippi Driver's Handbook, Department of Public Safety

# ENGLISH

## Philosophy

The English department feels that the student should be able to communicate to the best of his ability so that he can more capably fulfill his purpose in life. To do this, he must develop skills in reading, writing, speaking, listening, and literature appreciation. The English teachers feel that the student should be encouraged to understand these language skills from a functional point of view, not only because they are required of him, but also because he can achieve enjoyment and benefit from them.

Correlation of English with other subjects is encouraged. It is believed that each department should stress spelling, handwriting, and sentence structure. Assignments for reports should be required of the student to enable him to think through a subject rather than copy from some writing. The student is inspired to do creative thinking and writing so that he can best apply his grammatical knowledge toward the goal of making him a better citizen in a complex society.

## Objectives

### Language

To help the student

1. Gain knowledge and understanding of the fundamentals of language structures.
2. Speak with poise, ease, distinction and correctness.
3. Comprehend the origin and development of the English language.
4. Achieve grammar skills by reinforcing knowledge through oral and written drills.

5. Spell correctly and develop spelling consciousness.
6. Develop an increasingly adequate vocabulary by regular consultation with the dictionary.

Composition

To help the student

1. Construct sentences which contain correct grammar, are varied in form, and are meaningful in content.
2. Select from a well-stocked vocabulary the appropriate words for the expression of ideas with precision.
3. Become aware of the value of correct punctuation in producing effective sentences.
4. Organize and summarize materials read and heard.
5. Find satisfaction and joy in the use of language skills to express his own feelings, thoughts, and imaginings.

Literature

To help the student

1. Acquire an increasingly deeper appreciation of our written language and to develop a lifetime love of books and reading, not only for instruction but also for pleasure.
2. Become acquainted, through literature, with people beyond the student's own environment, and thus broaden his social consciousness.
3. Gain an understanding of his own political, cultural, and religious heritage.
4. Read and listen with an analytical and critical attitude.

5. Understand various methods and techniques used by good writers so that he can attempt to use these in original writing.
6. Attain background knowledge of American and English literature.

Description

The credits begin in the ninth grade and continue through the twelfth grade, with four units required for graduation. Literature is combined with language arts to form the entire unit.

Tenth Grade

The first six-weeks period is spent in a general review of material previously taught in the ninth grade, such as parts of speech, basal parts of the sentence, capitalization and punctuation. This review is directed and more thoroughly applied with the aid of diagnostic tests and simple autobiographies to help the teacher recognize the weaknesses of the students.

A concentrated short unit is taught on the simple fundamentals of paragraph writing. This unit encourages unity and coherence, introduces connectives, and explains the topic sentence. The unit also stresses the rules of capitalization and punctuation.

During the first few days of this first term, the importance of reading is stressed; and plans are made with the students for the year's objectives in outside reading. The students are given assistance in selecting books for reporting.

The second six-weeks period is largely spent covering a unit of short stories which touches as many parts of the world as possible. Each student is asked to keep a notebook containing helpful facts about authors, a glossary of terms and technical words, character sketches, and various word lists. Creative writing opportunities consisting of short essays follow this study.

During the third six-weeks, complex sentences are introduced after a brief review of sentences according to use and form. Help is given in punctuation of compound sentences and in the correct use of coordinate conjunctions. Thorough drill in adjective, adverb, and noun clauses is offered with help on relative pronouns as introductory words for adjective clauses. Punctuation rules pertaining to nonrestrictive adjective clauses, as well as introductory adverb clauses, are effectively taught at this point. At this time a unit of poetry is offered. Choral reading, reading aloud individually, memory work, and assigned projects by individuals or groups are effective. Notebooks are kept with reports on authors, lists of technical words and terms, and examples of figures of speech. Opportunities are given for self-expression and interpretation.

During the fourth term, a review of verbals and a drill in verbs and their properties are given along with a review and application of conjugation. A unit of literature pertaining directly to other countries is offered, with continued emphasis on developing paragraphs into themes. Students study methods of communication such as, oral readings, interpretations, records, oral reports, and current events concerning contributions by foreign people. Paperback novels can be used in connection with this unit very nicely.

The fifth six-weeks period is filled with drama, especially the plays Helen Keller and Julius Caesar. Here again the notebook is beneficial to keep favorite quotations, character sketches, descriptions, and technical word lists. Much interest is created by special reports, recording of students' voices, dramatizations, and the interpretations of great lines. Student talent is demonstrated through individual projects put on display in the classroom.

The last six-weeks period is spent in review of grammar and, if time permits, a study of a paperback, such as Silas Marner. Near the end of school an evaluative test is given to determine the winner of the tenth grade English award.

Tenth Grade

Textbook: The New Building Better English -- Fourth Edition -- Harper and Row

Literature Text: Adventures in Appreciation -- Laureate Edition -- Harcourt, Brace and World, Inc.

Eleventh Grade

The first few weeks are spent reviewing material learned previously. In the study of grammar, emphasis is placed on the parts of speech. Noun, adjective, and adverb clauses and their uses, restrictive and nonrestrictive clauses, kinds of sentences, punctuation, and a comprehensive unit on verbals are also taught.

Students are taught to use this knowledge of grammar in writing. The outline, topic sentence, and the paragraph developed from the topic sentence are reviewed. Methods of developing the paragraph are emphasized. Next, the students write short themes. Students are urged to develop their own ideas in theme writing. Much emphasis is placed on vocabulary study and spelling.

Literature is taught by periods, beginning with the Colonial period. Through study of American literature, students are taught to appreciate their American heritage. Students are required to paraphrase short poems. Figures of speech and literary terms are introduced. Reports on books by American writers are required. Students are taught how to develop and present effective written and oral reports.

Eleventh Grade

Textbook: The New Building Better English -- Harper and Row

Literature Text: Adventures in American Literature -- Harcourt, Brace and World, Inc.

Twelfth Grade

The first term of English IV is devoted to reviewing the parts of speech. A comprehensive unit on verbals, which extends into the second six-weeks, is taught.

Theme writing is the major area covered during the second term in English IV. During the theme writing unit, students are taught how to express ideas in effective sentences, how to develop paragraphs, how to outline, and how to write forceful themes.

During the third term, the students enter upon a study of English literature. The study is carried out by literary periods beginning with the Anglo-Saxon period and continuing through the Medieval, Elizabethan, Seventeenth and Eighteenth Centuries, Romantic, Victorian, and Twentieth Century periods. Different literary genres and various aspects of style are studied when appropriate.

During the fifth term, a literary research paper of one thousand to fifteen hundred words is required of all seniors.

Spelling and vocabulary are emphasized throughout the year by weekly tests. Speech is stressed through oral and choral reading, panel discussions and formal speeches.

Twelfth Grade

Textbooks: Adventures in English Literature -- Harcourt, Brace and World, Inc.

The New Building Better English -- Harper and Row

Workbook and Handbook: The New Building Better English -- Harper and Row

Journalism

The journalism course strives to do the following things:

1. Develop the creative and literary potential of the students.
2. Encourage cooperative group work.
3. Foster school spirit through the media of news.
4. Present a historical record of the year's happenings.

Emphasis during the first half of the school year is upon the makings and production of the school annual. During the second semester, concentration is placed upon the production of the school paper. Throughout the school year a journalism student edits a weekly news column for the local newspaper.

Journalism

Textbook: High School Journalism -- Macmillan Company

Techniques

Techniques used are as follows:

1. Grouping of high school students according to their ability to learn.

2. Giving clear assignments without repeating them in order to develop listening skills.
3. Using bulletin boards.
4. Using the voice skillfully.
5. Starting lessons promptly.
6. Teaching one skill at a time.
7. Building on students' present knowledge.
8. Praising freely.
9. Using flexible study plans to meet class needs.
10. Making additional examples to students to illustrate a point.
11. Teaching language skills by selecting a time when students can see an immediate need for this knowledge.
12. Using classroom situations and classroom names to supplement and enrich the text exercises.
13. Instructing students in correct use of the library with materials and books which are beneficial. Students are required to read a minimum of six books per year and are instructed in procedures of book reporting.
14. Developing various skills in speaking, listening and viewing. To promote oral skills, group discussions are arranged, oral and choral reading is practiced, and reports are given. Such activities as speeches, lectures, and dramatizations are offered for listening; and film strips, slides and pictures are shown for developing the skill of viewing.
15. Stressing writing skills in all written work. The correct form for written work is stressed; spelling, grammar and content are

emphasized in all written work.

Methods of Evaluation

1. Essay type tests
2. Standardized objective tests
3. Term papers
4. Oral reports
5. Role plays

Significant Features

1. All English teachers use the same marking system.
2. All teachers stress functional grammar.
3. Students participate in civic-sponsored writer's contests.
4. Journalism is offered to a select group of students.
5. Regular meetings of members of the English Department are held.
6. Teachers are congenial and cooperative.
7. A sequential program of study is used.
8. The teachers are professional in their conduct and in pursuit of higher education.

Textbooks:

Johns, Nellie; Yates, Pauline M.; and DeLaney, Edwin M. Building Better English Series. Evanston, Illinois: Harper and Row Publishing Company.

Priestly, J. B., and Spear, Josephine. Adventures in English Literature. Atlanta, Georgia: Harcourt, Brace and Jovanovich.

Spears, Harold. High School Journalism. Dallas, Texas: The McMillan Company.

(Example-Fusion of Career Education into academic areas)

CAREER COMPANION GUIDE

Subject & Grade English - 11 or 12 Text: ______ Name ______ Publisher ______ Copyright

Career Objective: ______

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| | | Business Committee: Have these students survey local businesses and develop ads for products and services available locally that would be of interest to readers of the trade journal. In addition, have them review the classified ads in local newspapers and contact establishments that hire people in their career interest area and develop a listing of job openings, including data on salaries, skill and experience requirements, working hours, etc.<br>Publishing Committee: Have these students take charge of the mechanics of producing the journal. Have them take responsibility for laying out the materials and selecting a printing, collating, and binding process. | | |

(Example-Fusion of Career Education into academic areas)

CAREER COMPANION GUIDE

Subject & Grade English - 11 or 12

Text: Name Publisher Copyright

Career Objective:

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| | | After committee reports have been given and the class selects a journal design, have students organize committees to facilitate the production of their own trade journal. One possible breakdown of work is suggested below.<br>Cover and Advertising Art Committee. Have students work with the English instructor in determining the roles and responsibilities of managing editor, features editor, article editor, advertising editor, etc. In addition, have this committee help develop processes for researching stories and articles, interviewing, determining length of articles, establishing length of articles, establishing writing styles, and editing copy.<br>Writing Committee: Have students write and submit articles on assignment from the editorial committee. | | |

(Example-Fusion of Career Education into academic areas)

## CAREER COMPANION GUIDE

Subject & Grade English - 11 or 12 Text: ________ Name ________ Publisher ________ Copyright

Career Objective: The student will be able to give an in-depth account of related occupations within a career cluster.

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| Writing | Careers related to publishing, such as editor, advertising, etc.<br>Other careers related to student interest will be included in the trade journal. | Involve students participating in career preparation classes, such as metal trades, building trades, home economics, agriculture, cooperative education, office occupations, etc., and in developing a trade journal representing their field of interest.<br>Have students write to publishers of trade newspapers and journals to obtain examination copies of their publications. Names and addresses of publishers and listings of their products can be obtained through the Annual Literary Market Place, compiled by R. R. Bowher Company, 1180 Avenue of the Americas, New York, New York 10036.<br>Form several committees to evaluate the collection of materials, comparing contents, writing style, overall format, and design. Have groups develop one or more "dummies" of how their own trade journal might be organized. | Magazines<br>Journals<br>Newsletters<br>(related to the career area under study) | |

# FOREIGN LANGUAGES

## Philosophy

Today, more than at any other period in history, the study of foreign languages is of tremendous importance. In this age of rapid changes, nations and individuals need to be able to communicate with each other in order to understand one another. The study of a language affords this opportunity to understand and communicate since it offers the student a knowledge of the customs, literature, arts, geography and history of the people. The better an individual is informed, the better citizen he becomes. A student may not thoroughly master a language, but his efforts to do so are still rewarded in that he now possesses a more effective use of English, his native tongue. The student of Latin, while developing the ability to read Latin, increases his understanding of the elements in English that are related to Latin. Since our own culture is based on the rich Greco-Roman civilization, this study gives the student a far better perspective of his culture.

Because more and more occupations today require a knowledge of a foreign language, because language does lend to an understanding and appreciation of other people and their culture, and because our colleges and universities are increasing their language requirements, the department encourages students to gain skill in a second or third language. Although the language may not be mastered by the student or used to its fullest extent, the student has nonetheless received enriching results from the experience.

## Objectives

1. To help the student understand linguistic concepts, such as the

nature of language and how it functions through its structural system.

2. To aid the student in acquiring knowledge of the significant features of the country or area where the language is spoken (geographic, economic, political, etc.)
3. To teach the student to develop an understanding of the literary and cultural heritage of the people.
4. To help the student contribute to the growth of a foreign language as a tool for a better mastery of English.
5. To help the student to become aware of the importance of developing the skills of hearing, speaking, reading, and writing and to identify his involvement in language behavior by learning to:
   A. Understand a foreign language when spoken at normal speed.
   B. Speak well enough to communicate directly with a native speaker.
   C. Read with direct understanding without recourse to English translation.
   D. Write, using authentic patterns of the language.
   E. Demonstrate the beauty of the language through recorded songs and selections from the foreign countries.
   F. Show a causal relationship between foreign languages and English for further comprehension of English vocabulary.

Description

Spanish

The first year Spanish course introduces the student to Spanish as a method of communication, both oral and written. Its purpose is to help the student acquire the ability to speak, read, and write. The second year of Spanish is included in the curriculum if requested.

## Techniques

In the first year of Spanish, the Edith Moore Janett and McManus series, El Camino Real, is used with tapes for each lesson.

The El Camino Real Workbook is used to test each student's skills in grammar and vocabulary. Each chapter stresses pattern drills, exercises, compositions, and vocabulary, as well as verb constructions.

The use of the language laboratory is emphasized for vocabulary study and pronunciation drills at least fifteen minutes per day. Time is also spent in the study of geography, history, and culture of Spain and Latin America. An overhead projector is used with a set of Spanish transparencies for audio and visual study of the language.

Each Spanish student is a member of the Spanish Club. Its purpose is to improve the communication among students, which is necessary to promote the understanding of a foreign language.

## Description

### French

The purpose of this course is to help the student acquire the ability to understand spoken French and to speak, read, and write the language. Comprehension of the spoken word is the first step to effective oral expression.

## Techniques

Le Cours Moyen de Francais by John B. Dale, D. C. Heath and Company, Boston, is used in the second year French class.

Each lesson is considered as a unit of related work rather than a single day's assignment. The course of study includes the following: recording students for self-evaluation; oral reading to strive for perfecting pronunciation; oral and written testing; memorization of proverbs; dictation; translation; discussion; lectures; newspapers (Chez-nous with its tapes); informal question and answer sessions by each member of the class; grammar instruction from Workbook in French by CISCO School Publications, Inc.; completion of a notebook with each grammar rule translated in French and memorized by each student; class participation in the National French Contest; and membership in the French Club.

The use of the laboratory is very extensive in this course. Each student is required to report to the laboratory four times during each six-weeks period. The student may do so during the thirty-minute activity period at the end of each school day.

Methods of Evaluation

1. Question and answer sessions
2. Standardized tests
3. A recording process for self-evaluation

Significant Features

1. Participation in the French contest sponsored by the American Association of Teachers of French.
2. Active club with varied activities in both languages.
3. Correspondence with students in Spanish-speaking and French-speaking countries.

4. Use of newspapers and tapes.

Textbooks:

Janett, Edith Moore, and McManus, J. M. *El Camino Real*. Atlanta, Georgia: Houghton-Mifflin Company.

Dale, John B. *Le Cours Moyen de Francais*. Boston, Mass.: D. C. Heath and Company.

(Example-Fusion of Career Education into academic areas)

CAREER COMPANION GUIDE

Subject & Grade Spanish and French 10-12 Text: Audio Lingual Materials Harcourt, Brace & World

Name Publisher Copyright

Career Objective: To communicate with people of other cultures

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| | Teacher<br>Airline Hostess<br>Interpreter for a government agency<br>Opera singer<br>Waitress or waiter in a Spanish or French restaurant<br>Doctor of Philosophy | 1. Small group learning:<br>Students practice pronunciation by speaking either Spanish or French while role playing interviews for jobs that require a speaking knowledge of one of these languages. The class will identify the jobs and the teacher will explain the communication skills necessary to qualify for the job.<br>2. Students will listen to tapes in individual booths. The tapes will give information concerning jobs that are available to individuals who speak Spanish or French. | Audio Lingual Materials<br>Brooks, Nelson, New York: Harcourt, Brace and World.<br>Human resources | Conversation<br>Observation<br>Follow-up of students |

# GUIDANCE

## Philosophy

The growth and development of the student is the focal point of the total educational process. Guidance is an integral part of the educational process. Through the guidance program, individuals are facilitated to accept self, to satisfactorily integrate self into society, and to develop goals and structure plans that will hopefully lead toward self-actualization. The guidance program strives to act as a catalyst in the development of the whole individual. It attempts to provide an atmosphere that will allow each student to become all that he is capable of becoming, and one that will promote the motivation that will assist the student in developing socially, emotionally, spiritually, physically and intellectually.

## Objectives

1. To help the student look objectively at the situation in which he finds himself.
2. To help the student understand himself--his interests, abilities, aptitudes, potentialities, handicaps, and other limitations.
3. To help the student secure information about opportunities available to him in the world of work or further education.
4. To help the student make adjustments to present situations and make wise decisions in setting up realistic and achievable goals for himself.
5. To provide individual inventories in the form of cumulative records for staff use in understanding students.
6. To make counseling services available to all students.

7. To assist the student in choosing a course of study.
8. To collect, organize, and present educational and occupational information to students.
9. To assist new students in orientation to the school.
10. To provide information on available financial assistance for the student wishing to further his education.
11. To assist students in job placement after graduation.
12. To work closely with parents, employers, and community agencies in furthering the welfare of the students.

Description

The Guidance Departments of the Jones County High Schools are coordinated by the principals and implemented by the counselors and other members of the staff. There is a full-time counselor in grades 10-12 in each high school. Each counselor has a private office located near the central office of the school.

The guidance program is organized into a number of services, each made up of many activities. The guidance program offers a counseling service to each student in school. Students may be counseled concerning educational programs, vocational programs, or about personal adjustments to situations. These interviews may be initiated by the student, teacher, counselor, or a combination of these. The school staff realizes that the counseling service is the heart of the guidance program.

The program offers an individual inventory service. Cumulative records are kept on the progress of each student. These records are kept up-to-date on the student's academic progress, schools attended, test results, and other pertinent information. A testing program for each student is carried on by the Guidance Department. The program consists of the following:

| | |
|---|---|
| National Educational Development Test | 10th Grade (Optional) |
| California Test of Basic Skills and California Short Form Mental Maturity | 11th Grade |
| National Merit Scholarship Qualifying Test | 11th Grade (Optional) |
| Armed Service Aptitude Test | 12th Grade |
| Kuder Preference Record Vocational | 12th Grade |
| General Aptitude Test Battery | 12th Grade students not going to college and those students planning to enter Vocational Technical Programs. |
| ACT | 12th Grade (Optional) |
| SAT | 12th Grade (Optional) |
| CEEB | 12th Grade (Optional) |

The test results are made available to all who may benefit from these results.

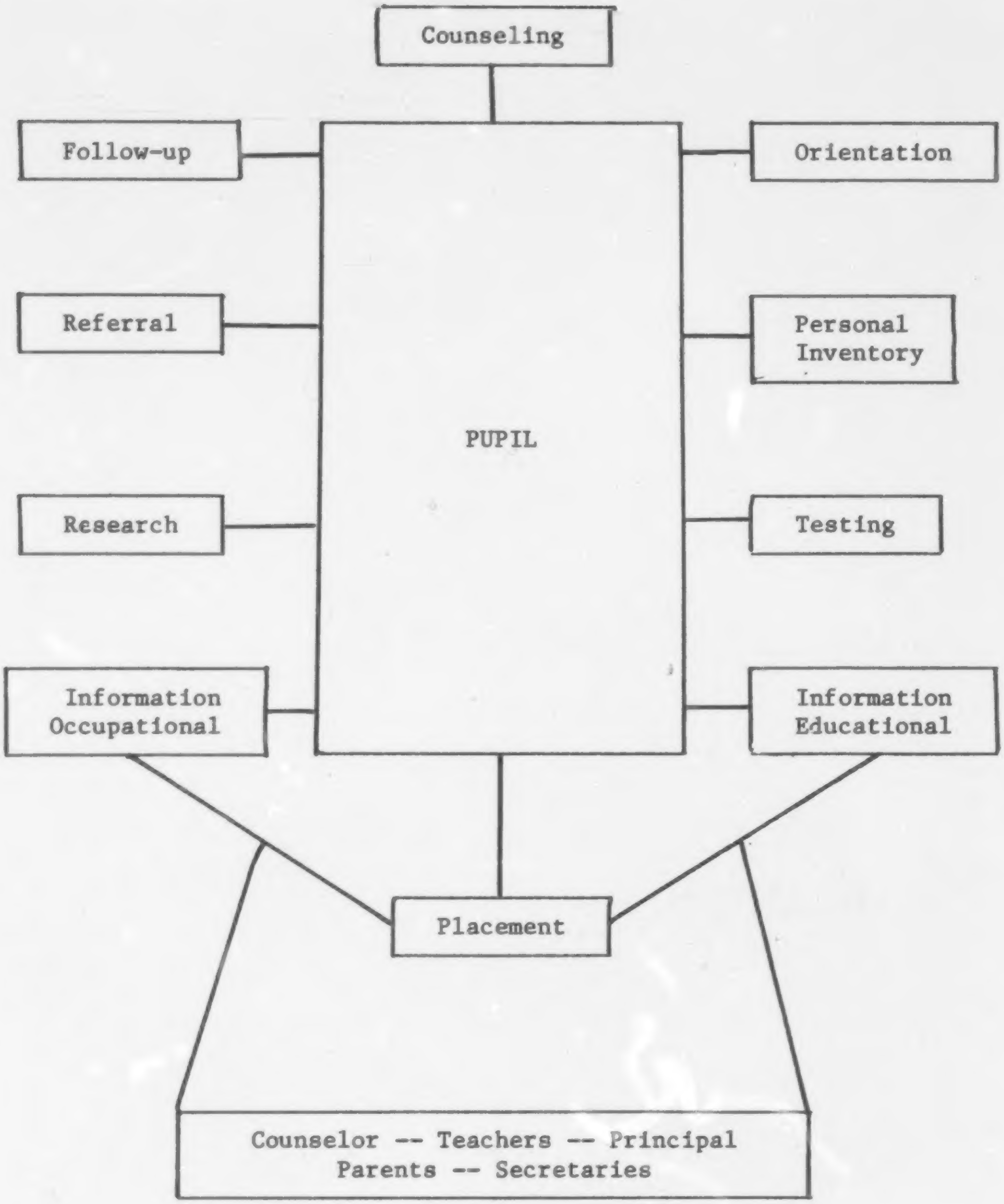
An information service is available through the guidance program for all those who seek educational or occupational information. Some of the information found in the library and/or the counselor's offices is as follows: *Lovejoy's College Guide*, *College Blue Book*, *Comparative Guide to American Colleges*, Barron's *How to Prepare for College Entrance Examinations*. The Chronicle Series for College Bound Students, college bulletins and application forms, ACT and CEEB information booklets and registration forms, scholarship information and applications, *Occupational Outlook Handbook*, *Dictionary of Occupational Titles*, Chronicle Career Kit, *Lovejoy's Vocational College Guide*, *American Trade School Directory*, Finney's Occupation Guidance Series, SRA Personal Adjustments Pamphlets, and military information.

The department also works with the placement of students. The first concern here is in the placement of the student in the school's curricular and in extra-class activities. The department also seeks to be of service to students in placement in occupations after graduation from high school.

An orientation program for all new students is available. Special orientation is given each spring to the students in the elementary schools who will enroll in the seventh grade the next fall. Additional orientation is given through counseling sessions.

Significant Features

1. Adequate educational and occupational information is available to all students.
2. An adequate testing program with the results used by teachers and counselors is in operation.
3. Cooperation between the counselors and librarian in making the information service available to all students is excellent.
4. There is an effective relationship between counselors, teachers, parents, community, and administration.


Counseling
Follow-up
Orientation
Referral
Personal Inventory
PUPIL
Research
Testing
Information Occupational
Information Educational
Placement
Counselor -- Teachers -- Principal
Parents -- Secretaries

# HEALTH AND PHYSICAL EDUCATION

## Philosophy

Modern living is a complicated process. Each phase of everyday activities is being streamlined by new inventions. Research has brought us to such a high level of efficiency that every task can be performed with greater ease, less physical effort, and in less time than ever before. Through almost every medium of communication, information on how to accomplish this is made available.

Out of this mechanical revolution have evolved new patterns of existence for the average person -- shorter working hours and more leisure time. The end result is that the leisure time is spent just as busily as the working hours. The typical family group of today, coordinated in an effort to continually raise its living standards with each member seeking a remunerative job at the earliest age, finds it difficult to maintain its unity. Because of the complex nature of life today, coordination of body, mind, and spirit is necessary. Thus, a healthy, well-rounded individual with all physiological systems of the body functioning on parallel lines is able to meet the many demands upon him with competence and self-assurance.

The need for the student to develop a healthy attitude concerning the development and conditioning of all systems of the body is basic to our physical education programs of today.

## Objectives

The objectives of physical education have been stated by various leaders in the field in many different ways. Fundamentally, they mean the same and point to the same common goal -- the development of a wholesome, healthy, happy, well-adjusted individual. Physical education is not unique in the field of education in striving to meet these objectives, but it does offer abundant situations and opportunities in which students can obtain these objectives. It may be said, however, that physical education contributes more to the following objectives than others:

1. To help the student establish a set of values concerning his physical being for guiding personal philosophies throughout life.
2. To provide the student with a program of activities for building physical strength through the development of the various organic systems.
3. To offer the student a program for conditioning and maintaining maximum physical efficiency, including good posture, efficient body mechanics, a sense of balance, strength, endurance, quick reactions, speed, agility, and correct sanitary procedures.
4. To place the student in learning situations, including accumulation of facts and knowledge for learning, and to teach him to interpret and to adapt such facts for his own use.
5. To provide a program of activities which will develop skills in many different and varied areas, thereby enabling the student to live safely and successfully.
6. To place the student in situations offering the opportunity to eject in a socially acceptable manner the many feelings of aggression placed upon him in everyday living occurrences.

7. To place the student in many different situations for teaching him through experience the making of personal adjustments within different segments of society.
8. To provide a program adapted to each student's level of understanding.
9. To help the student to develop satisfactory motor skills, maximum physical power, and to help him increase social, emotional and mental growth.

## Description

### Grades 10-12

1. Students in grades 10-12 are not required to take physical education.
2. Students will receive one-half unit of credit each year for physical education. This credit is included in the seventeen units a student must earn before receiving a diploma.
3. Each student shall be required to attend five class meetings a week.
4. Students who desire to participate in any varsity sport will be assigned to sixth period physical education classes. At any time during the year that he is not engaged in varsity practice sessions, he will participate in a physical education activity class five days each week.
5. Fifteen hours each semester will be devoted to health education.

## Techniques

1. Formations

2. Basket assignment
3. Warm-up drill
4. Corrective exercises
5. Shower and dressing

Evaluation

Evaluation is not based solely on the mastery of subject matter, or knowledge, or on skill, but on the total growth and development of the student. Basic methods of evaluation should include the following:

A. Observation of attitude
B. Self-evaluation by pupils
C. Teacher-pupil cooperation
D. Interviews
E. Tests and measurements
F. Progress charts

Measurement indicates the amount of change is confined to the testing of rather distinct changes with objective techniques and methods. We must measure what we can, appraise and judge where we cannot, at the same time realizing that any system based on sound educational principles, inadequate though it might be, is better than none at all.

Text

Nicoll, J. S., Foster, J. C., and Bolton, W. W. Your Health Today and Tommorrow. Atlanta, Georgia: Laidlaw Brothers, Inc.

(Example-Fusion of Career Education into academic areas)

CAREER COMPANION GUIDE

Subject & Grade Health and P.E. 10-12 Text: Name Publisher Copyright

Career Objective: The student will identify health occupations that are concerned with research, prolonging life, and preventing disease.

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| Common Diseases and Disorders | Physician<br>Nurse<br>Technician<br>Radiologist<br>Pathologist | After an extensive study of common diseases, divide the class into groups. Have each member of each group list one disease he has had or has been vaccinated against. Have the group list one disease that has been a leading cause of death in the community, and identify one occupation or profession that works toward correcting this situation.<br>Ask a resource person, preferably a physician, to talk to the class about incurable diseases, the need for research, and careers available in the field of medicine and health.<br>Ask a coach to talk to the class and explain the careers available in athletics, the educational preparation needed, salary expectations, etc.<br>Make field trips with students in small groups to a local hospital. Let students interview the administrator, head nurse and technician. | Your Health Today and Tomorrow by Nicoll, Foster and Bolton. Laidlaw Bros., Inc., Atlanta, Georgia.<br>Physician<br>Coach<br>Hospital<br>Hospital Administrator | Follow up on career choices of class members. |

# HOME ECONOMICS

## Philosophy

The home economics instructors of Jones County High Schools are interested in the everyday living of people--the food they eat, the clothes they wear, the homes they live in, their personal development, their family relationships, the family health, the rearing of their children, the management of their time and energy, their capabilities and potentialities, the values that they cherish, and the resources that are available to them.

Because there is an ever-increasing demand for the school to assume more responsibility for the personal and social training of youth, the staff believes that home economics education can contribute greatly to all these phases of a student's personal, family, and community life.

Since rapid social and technological changes are being made that affect our way of living, it is felt that home economics teachers must be among the first to be aware of these changes. They must guide the students in the right direction toward solving the problems which affect them as individuals and as family members.

The main objective of home economics education is to provide direction and guidance in helping students live a more useful and satisfying life, and to provide the opportunity for the student to develop to her highest potential in order that she may be prepared to assume her future role as career lady, wife, mother and community leader.

The home economics curriculum should be comprehensive, affording an academic and vocational instructional program based on the pupil's needs and interests and should be gauged to their respective abilities. The program should be designed to prepare the students who plan to go to college and to train those who will seek gainful employment after high school.

## Objectives

1. To help the student achieve a satisfying and functional philosophy as it relates to personal and family living.
2. To help the student develop a wholesome attitude toward understanding self, accepting self, and improving self.
3. To help the student establish values which give meaning to effective personal, home, and community living.
4. To help the student realize the importance of developing physically, intellectually, emotionally, socially and spiritually.
5. To help the student acquire the techniques and skills needed to meet successfully the problems of immediate personal and family living.
6. To help the student develop some ability to make intelligent decisions regarding the use of personal, family, and community resources.
7. To help the student acquire knowledge and develop skills and positive attitudes related to the various aspects of home economics.
8. To incorporate the home economics program into the total school curriculum.
9. To provide for parent, pupil, and teacher planning through the school year.

10. To instruct the student in the basic principles of food and nutrition, grooming and clothing, first aid, housing and home management, child growth and development, family living, and occupational employment.
11. To help the student recognize that families have varied backgrounds and traditions, yet each contributes to the individual and the community.
12. To emphasize to the student a code of ethics and values which encourages the development of a self-respected person.
13. To help the student learn to work with others through membership in the Future Homemakers of America.
14. To alert the student to the possible job opportunities that exist in home economics and related occupations and to assist her in developing personal characteristics that are needed for success on the job.

## Specific Objectives

1. To help the student recognize her personal worth and the worth of others.
2. To help the student develop physically, socially, emotionally, mentally, and spiritually.
3. To help the student understand the importance of a philosophy of life to guide her daily living.
4. To help the student set some standards that will help her be a better family member.
5. To help the student understand the value of living democratically in the home, school, and in the community.

6. To help the student gain additional understanding of the role of the home and the family in the development of a child.

7. To help the student gain a greater appreciation of the joys and satisfactions derived from successful family living.

8. To help the students gain more understanding of factors which affect a family's standard of living.

9. To help the student learn to appreciate beauty and develop a desire to create an attractive environment for herself and her family.

10. To help the student acquire some skills in using different kinds of table service, in creating attractive flower arrangements, and in using table graces to make mealtime more pleasant.

11. To help the student develop the desire to eat the foods that contribute to her health, appearance, and vitality.

12. To help the student develop more ability in planning, preparing, and serving adequate family meals attractively.

13. To help the student become more proficient in the use and care of the kitchen and its equipment.

14. To help the student develop more skill in food selection, care, and preparation for maximum retention of flavor and food nutrients.

15. To help the student recognize the importance of analyzing her wardrobe needs in relation to the family clothing expenditures.

16. To help the student develop the ability to plan and make a variety of garments.

17. To help the student develop originality and creativity of her

talent in needlecrafts and clothing construction.

18. To help the student understand and appreciate the importance of self-evaluation.

19. To help the student establish purposeful goals and to teach her to work toward these goals through job training and career choices.

### Description

Home Economics is an elective course at Jones County High Schools. One unit of credit is given for each of the courses offered with the exception of the course for eighth grade students. No credit is given these students, and it must be their fifth subject.

The home economics department is vocational and offers training to its students in the following courses:

Home Economics I -- Grades 9-12
Home Economics II -- Grades 10-12
Home Economics III -- Grades 11-12
Family Living -- Grade 12
Bachelor Living -- Grades 11-12

The study of home economics is a continuous process of instruction centered around family life and employment. The following areas are offered in pre-vocational home economics, Home Economics I, Home Economics II, Home Economics III, and Family Living:

1. Food and Nutrition
2. Personal Grooming
3. Clothing and Textiles
4. First Aid and Home Nursing

5. Home Management and Housing
6. Child Care and Development
7. Management and Consumer Buying
8. Personal, Social, and Family Development
9. Occupational Employment

Home Economics I, II, and III are designed to meet the needs and concerns of high school girls and boys, providing them opportunities for many enriching experiences through the following courses of study: child development, clothing and textiles, food and nutrition, home management, housing and home furnishings, personal development, marriage and family living. Consumer Economics is taught as a part of all units.

Family Living is designed to enlighten high school boys and girls in the basic principles involved in family life. During the two-semester course the students study the individual, families in society, marriage as a way of life, children in the family, management of family resources, and housing for the family.

Bachelor Living is designed to help high school boys develop within themselves the art and craft of successful living so that they may be prepared to attain success in their personal, social, and family living. Units for the two-semester course include grooming, social graces, wardrobe care and planning, personality development, good speech, success on the job, and physical fitness.

Techniques

1. Class discussions

2. Panel discussions
3. Teacher-pupil planning
4. Buzz sessions
5. Demonstrations
6. Oral reports
7. Written reports
8. Debates
9. Surveys
10. Research people
11. Laboratory experiences
12. Home experiences
13. Lectures

Methods of Evaluation

Evaluation is a process by which the growth and development of individuals are determined; therefore, in teaching and learning there must be some type of evaluation. The following methods of evaluation are being used:

1. Class discussions
2. Checklists, score cards
3. Objective tests
4. Oral tests
5. Observations
6. Written autobiographies
7. Oral expression
8. Home experiences

9. Problem solving situations
10. Group work
11. Teacher-made tests
12. Self-evaluations

Significant Features

1. Bachelor Living, a new home economics course, is being offered to the eleventh and twelfth grade boys.
2. Family Living is being offered to the twelfth grade boys and girls. This is also a new course.
3. Home economics education not only represents preparation for a career, but it also provides training for a wife and homemaker.
4. Future Homemakers of America is an integral part of the home economics program because it offers an opportunity for the student to plan and carry out activities related to home economics.
5. The Homemaker of the Month is awarded to the most outstanding student in home economics for the month.
6. The Metropolitan Business and Professional Women's Organization awards a twenty-five dollar savings bond for the most outstanding senior girl in home economics.
7. The Crisco trophy is also awarded to an outstanding home economics student for her leadership, cooperation, and interest in this field.
8. The Betty Crocker test is offered to all interested senior girls who are taking or have taken home economics. The high scorer is awarded a pin.

# References

Craig, Hazel Thompson. Thresholds To Adult Living. Peoria, Illinois: Chas. A. Bennett Company.

Craig, Hazel Thompson, and Rush, Ola Day. Homes With Character. Boston: D. C. Heath Company.

Shank, Dorothy E., Fitch, Natalie K., Chapman, Pauline A., Sickler, Mary Suzanne. Guide To Modern Meals. St. Louis, Missouri: McGraw-Hill Book Company.

Sturm, Mary Mark, and Grieser, Edwina Hefley. Guide To Modern Clothing. St. Louis, Missouri: McGraw-Hill Book Company.

(Example-Fusion of Career Education into academic areas)

## CAREER COMPANION GUIDE

Subject & Grade Home Economics    Text: ______ Name ______ Publisher ______ Copyright

Career Objective: When preparing to construct draperies, the student will measure a window and compute with 100% accuracy, the yardage of fabric needed.

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| | Home furnishings aide<br>Interior designer's aide<br>Interior Decorator<br>Salesperson in home-furnishings department<br>Fabric shop owner | Have an interior designer, or an employee of a home furnishings department explain the many tasks performed by an interior designer.<br>Give each student a picture of an undraped window. Ask the student to measure the width and length of the window. (let 1 inch represent two feet). Measure from the rod location to the floor, allowing 3 inches for a bottom hem and 4 inches for a heading. The student will then state in writing the finished length, the hem allowance, the heading allowance, and the cutting length. The student will also figure the width of fabric needed. Finally, the student will figure the amount of fabric needed for a drapery for the measured window.<br>Have the student explain in writing, the relationship of this experience to an occupation in the home furnishings area. | The Complete Book of Sewing by Larry Eisinger and Dolores Sini, Greystone Corporation, 225 Park Ave. South, New York, New York, 10003. | |

# INDUSTRIAL ARTS

## Philosophy

Because industrial arts is the phase of general education that deals with industry and because so many graduates will be employed in skilled or semi-skilled industrial occupations, the Industrial Arts Department believes its educational role to be the preparation of students to meet the demands of a technological culture. The responsibility of this department is to provide a background in the basic skills and industrial procedures that will help the students meet the requirements of today's industrial society.

The department believes that emphasis should be placed on developing the students' technical knowledge, skills, attitudes, appreciation, safety, self-realization and initiative, which are necessary for solving problems common to industry. The organization of the program should be so constructed that the knowledge and experience encountered may serve to answer the student's questions as to what is expected of him socially, educationally, and vocationally. The program should enable the student to coordinate his academic attitudes so that he may adjust more adequately to the duties and responsibilities of society today.

## Objectives

1. To help the student develop a better understanding and a greater appreciation of American industry.
2. To provide experiences that will help the student discover his own industrial occupational interests, abilities, and attitudes for both profit and pleasure.

3. To help the student develop the habit of performing any task in a safe, orderly way.
4. To help the student establish a closer relationship between industrial arts courses and other school subjects.
5. To impart consumer knowledge so that each student may select, purchase, use properly, and maintain the products of industry.
6. To help the student develop basic skills in the use and care of tools and machines.

Description

The Industrial Arts Department of Jones County High Schools offers mechanical drawing to one section, Industrial Arts I to two sections, Shop I to one section, and Shop II to one section. With the exception of mechanical drawing, industrial arts courses are offered as electives to boys only.

Industrial Arts I, the basic course for seventh and eighth grade students, offers drafting (freehand), introduction to woodwork, and arts and crafts.

Shop I, consisting of drafting,woodwork, and arts and crafts, is more advanced than Industrial Arts I and is offered as an elective in the ninth through the twelfth grades.

Shop II is designed to enable students who have a special interest in industrial arts to have advanced studies in the area. Students must write term papers on a subject related to industry. Students must have completed Shop I as a prerequisite to this course.

Mechanical Drawing, which includes both engineering and architectural drawing, is offered to any high school student.

Arts and crafts is designed to help the students develop and pursue a worthwhile hobby or hobbies and develop a knowledge of the working characteristics of the industrial materials used most often.

Woodworking is taught to Industrial Arts I students to allow them to gain experience in the proper use and care of hand tools and power equipment.

Advanced woodwork is designed for Shop I classes and is taught to improve the students' skills in using hand tools and woodworking machine tools.

Designed for students seeking a vocation in engineering, architecture, or other drafting fields, mechanical drawing provides a general knowledge of the manipulative skills of drawing, lettering, orthographic projection, principles of design, pattern enlargement, and scale drawing. Architectural drawing is designed to provide knowledge and skill in lettering, cut sections, house designing, and reading blueprints.

### Techniques

The following methods of instruction are used in the Industrial Arts Department:

1. Lecture
2. Demonstration
3. Individual instruction
4. Group instruction
5. Project plan sheet

6. Individual projects

Visual aids used are chalkboards, bulletin boards, filmstrips and overlays.

Evaluation

The student's progress is evaluated through the grading of his individual projects and tests.

Significant Features

1. Classes are small enough for individual instruction which aids student progress and achievement.
2. Audio-visual materials are available for use in the instructional program.
3. Students develop drawings and plans, and follow a planned step by step procedure in constructing projects.
4. Modern tools and equipment are employed in the program.

Text

Groneman, Chris H. and Feirer, John L. General Shop. New York: McGraw-Hill Book Company.

(Example-Fusion of Career Education into academic areas)
CAREER COMPANION GUIDE

Subject & Grade Industrial Arts 10-12 Text: ______ Name Publisher Copyright

Career Objective: The student will develop skills which relate to cabinetmaking

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| Wood-working | Carpenter | Constructing a Gun Rack | | |
| | Cabinetmaker | 1. Select stock | Wood | Observation and checking pre-determined measurements. |
| | Machine woodworking operator | 2. Surface to desired thickness | Drawing or template | |
| | Contractor | 3. Transfer design by template to stock | Woodworking machines | |
| | Lumber Grader | 4. Cut to correct length | | |
| | | 5. Cut design with jig or band saw | Woodworking hand tools | |
| | | 6. Finish surfaces by sanding | Screws | |
| | | 7. Assemble parts | Glue | |
| | | 8. Remove all glue and stain | Stain | |
| | | 9. Apply desired finish | Finishing materials | |

# MATHEMATICS

## Philosophy

Mathematics continues to play an increasingly important role in the complexities of modern life. Demands of industry and the professions have made it necessary for mathematicians to extend and recombine old and new branches of mathematics. Satellite and space operations have alerted the world to the value and necessity of mathematical principles. Our educational system has had to provide for changes in the mathematics curriculum, in techniques, and in teacher preparation for the new approach.

Because mathematics is the basis for so many of the great advances made by man, every student should be given an opportunity to study as extensively in this field as his ability and interest will carry him. Provision should be made for those students with superior ability who have special interest in this area. A working knowledge of basic mathematics should also be provided for those whose formal education will terminate with high school.

## Objectives

The chief objective of the Mathematics Departments of the Jones County High Schools is to develop the student to his greatest potential in mathematics. To do this the departments seek the following:

1. To make the processes meaningful to the student by constant emphasis on the basic principles.
2. To emphasize to the student the nature and structure of mathematics.

3. To encourage original and creative thinking in the student.
4. To develop in the student the ability to reason logically and to think critically.
5. To provide the student with an adequate background for further training.
6. To help the student develop an appreciation of the importance of mathematics in the modern world and of the contribution of mathematics in the development of our civilization.

Algebra I

1. To develop further the student's grasp of algebraic symbols.
2. To extend the student's understanding of the important ideas of algebra relating to the use of variables.
3. To enable the student to use equations and axioms in problem solving.
4. To enlarge the student's concepts of operations with directed numbers, factoring, and graphing.
5. To strengthen the student's ability to solve problems by logical reasoning.
6. To inspire a desire for proficiency.
7. To help the student master the fundamental operations of algebra and establish a basis for grasping further mathematical concepts.

Algebra II

1. To strengthen the student's algebraic skills.
2. To deepen the student's understanding of the structure of

algebra.

3. To enlarge the student's understanding of deductive reasoning in algebra.
4. To develop an understanding of the function concept, the real and complex number systems, and trigonometric and logarithmic functions.
5. To help the student see the interrelationship of geometry and algebra.

Unified Geometry

1. To develop the student's understanding of the basic structure of geometry.
2. To help the student gain an understanding of intuitive, inductive, and deductive methods and an appreciation of the need for precision of language.
3. To develop further the student's algebraic skills.
4. To help the student gain some knowledge of the methods of coordinate geometry and of the ways in which algebra and geometry complement each other.
5. To help the student experience the stimulation and satisfaction that come from clear, creative, logical thinking.

Senior Mathematics

1. To extend the student's knowledge of mathematical structure and the concept of functions.
2. To develop in the student a full understanding of trigonometric principles.

3. To help the student acquire facility in applying modern mathematical techniques.

4. To help the student prepare himself to enter college mathematics courses.

Description

The course of study provides algebra I, unified geometry, algebra II, and advanced high school mathematics for those students who enter the ninth grade ready to pursue the college preparatory courses. Two courses, Modern Basic Mathematics I and II, are provided for those who do not plan to attend college and for those who need additional work before entering the college preparatory courses.

Techniques

The instructional program includes discussions of mathematical techniques and procedures. Discovery techniques are used as much as possible. Demonstrations of problem solving are given on the chalkboard by the teacher and by the students. Charts and models are used to illustrate some of the topics under discussion. Some drill work is given in class, and homework assignments are made. Assignments may include some library work or a project. The progress of students is evaluated by the use of tests from the textbook and teacher-prepared tests. The Guidance Department provides data from achievement tests.

Methods of Evaluation

1. Standardized tests
2. Teacher-made objective tests

3. Teacher-made subjective tests
4. Problem solving demonstrations
5. Projects that show application of principles of math

Significant Features

1. Teachers of mathematics are trying to make the students aware of the importance of mathematics in life.
2. Equipment needed in this department includes sextants, survey instruments and films.
3. Fifty-four per cent of the students are taking mathematics as an elective course.
4. The number of students per section is uniformly distributed.
5. The textbooks are modern and well written.
6. The mathematics teachers pool their ideas and methods for the benefit of all.

Tenth Grade

The tenth grade student usually continues the series begun in the ninth grade by taking mathematics II or unified geometry.

Unified Geometry - Textbook: Modern Geometry by Jorgensen, Donnelly, and Dolciani, Copyright: 1965 by Houghton Mifflin Co.

This course is a study of the elements of geometry and their relationship to algebra and trigonometry. Specific topics studied are sets, solving problems (induction, deduction, and intuition), planes, lines, polygons, and trigonometry.

Mathematics II - Textbook: Modern Basic Mathematics, Book 2 by Skeen and Whitmore, Copyright: 1965 by L. W. Singer Company

Mathematics II is a continuation of Mathematics I in more detail. New topics include trigonometry, metric geometry, locus, and right triangles.

Eleventh Grade

The eleventh grade student will usually have the required units in mathematics. If he wishes further studies in mathematics, he will take Algebra II. This course is on an elective basis, and more is required of the student. Topics studied in Algebra I are reviewed and extended, and new topics are introduced.

Algebra II - Textbook: Concepts of Modern Mathematics, Book III
by Kenner, Small and Williams, Copyright:
1965 by American Book Company

New topics studied are logarithms, determinates, higher degree equations, complex numbers, exponents, inequalities, and selected topics in analytic geometry.

Twelfth Grade

Advanced Mathematics - Textbook: Advanced High School Mathematics
by Vannatta, Carnahan and Fawcett, Copyright: 1965 by Charles
E. Merrill Books

Advanced mathematics is offered only to seniors who have completed unified geometry and Algebra II. The primary purpose is to provide a course in pre-calculus to bridge the gap between intermediate algebra and calculus. The content includes elementary mathematical analysis, trigonometry, and analytic geometry. In addition to the textbook, several supplementary texts are used. Emphasis is placed on logarithms, the number system, and graphs.

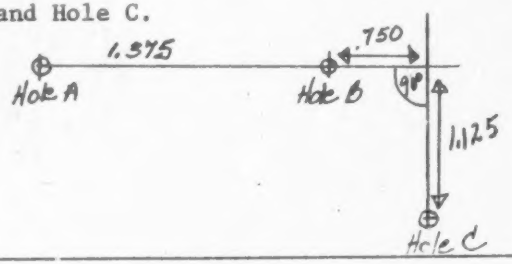
(Example-Fusion of Career Education into academic areas)

## CAREER COMPANION GUIDE

Subject & Grade Trigonometry (12th Grade)

Text: Trigonometry (Name) Prentice-Hall, Inc. (Publisher) 1959 (Copyright)

Career Objective: To have interested students evaluate career opportunities in mathematics.

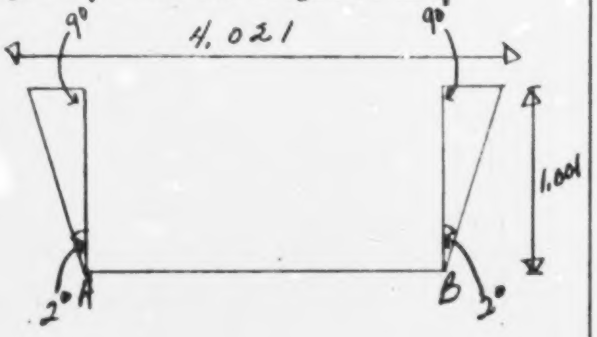
| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| Solution of Right Triangles | Engineering<br>Physics<br>Aviation<br>Radar Control<br>Data-Processing<br>Astronomy<br>Industry | Students will be asked to research a career of interest. From this career, the students will be asked to select a problem that could be solved by an understanding of the right triangle. Students will be carried on a tour of the Spartus Corporation's Tool and Dye Department to get a view of right triangles being used in the manufacture of clocks.<br>The following are typical examples of problems that arise in the Tool and Dye Department of the Spartus Corporation that are solved by an understanding of right triangles.<br>Example 1. Find the distance between Hole B and Hole C.<br> | Trig. Easy-Pak (This is designed especially for use in industry.)<br>This can be ordered from the address below:<br>Derck's Gauge Dial Co.<br>P.O. Box 924<br>Indianapolis, Indiana | |

CAREER COMPANION GUIDE

Subject & Grade____________________ Text:____________________________

Name Publisher Copyright

Career Objective:________________________________________

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
|  |  | Example 2. Find the length of AB.  |  |  |

## MUSIC

### Philosophy

Music is considered to be an educational experience that is needed by students. When an experience can be analyzed into patterns of melody, harmony, rhythm, and tonal color, it is called musical. Musical experiences should play a considerable role in the lives of the students; and such experiences are best when they are motivated by procedures designed to shape the musical skill, knowledge, and taste of the learner.

### Objectives

1. To offer music as an experience as well as preparation for future study.
2. To recognize individual differences in musical ability, and to strive toward progressive improvement of each student.
3. To utilize music studies in helping students develop positive attitudes toward aesthetic values, and to encourage social and moral improvement.
4. To provide musical projects which discover talent.
5. To encourage music participation for all students.
6. To provide broader music courses that will stimulate students to think by listening, playing musical instruments, singing, and doing creative musical activities.
7. To promote student participation in the performing areas through local, district and state music festivals.
8. To provide musical instruction for prospective students in

music appreciation, theory, and general interest.

9. To stress music as a part of the overall development of a well-rounded individual.

## Philosophy of the Instrumental Music Department

Music has become an integral part of the life of the American child--in school, at home, and in the community. Great philosophers and educators of all time have recognized its importance in education. The primary purpose of all music education is the development of a love and an appreciation of music. Music can contribute to the physical, intellectual, social, and spiritual growth of the student. Through varied experiences such as singing, rhythmic movement, creative activities, listening, and playing on instruments, each child can discover and develop his own ability and interest in music. The pleasure of making music not only affords a means of self-expression, but it also helps the student adjust more effectively to the society in which he lives. Our basic philosophy is that such opportunity should be provided for every student in our school system so that all students will understand, enjoy, and use this language.

## Objectives of the Instrumental Music Department

1. To provide many opportunities to enjoy all kinds of musical experiences.
2. To promote an appreciation and understanding of representative, standard music literature of quality.
3. To develop skills and technical abilities leading to mastery of instruments and to artistic, expressive performance.

4. To provide a means of wholesome recreation and pleasure to carry over into worthy use of leisure time.
5. To provide an orientation and basic study to eventually lead to a career in music.
6. To represent the school in public concerts, parades, and other public recreation functions.
7. To develop personal character traits of poise, dependability, and leadership.
8. To create an understanding of the democratic process through self-imposed discipline and individual contribution to cooperative effort.

Description

The beginning band program is offered primarily to students on the junior high level but is extended to any high school student who has not completed the eleventh grade. During this first course in instrumental music, these elements are presented: class conduct, instrument care, measuring of time, tone production, posture, articulation, breathing, fingering, reading of musical symbols, listening, playing in tune, playing by ear, thinking, responding, cooperating, and enjoying.

The marching or parade band is composed of students in grades seven through twelve. The season usually beings approximately three weeks before the opening of the school year in order to prepare for the first performance. The fundamentals of drill, uniformity of execution, and individual instruction in music and marching are stressed. The music used familiarizes the student with traditional marches, show tunes, popular tunes, and adaptations of classical music. The band performs for all football games whether on regular schedule or extended schedule, for several parades each year, and at the Mississippi State Band Festival.

The concert band is composed of students in grades ten through twelve but may include outstanding students from the ninth grade. The concert band goes into organization immediately following the football season and continues throughout the year. Basic fundamentals of music and of instrumental music are stressed. Ear training, technique drills, and rhythm drills occupy a large portion of the rehearsal period. Many different types and styles of music compositions are covered each year. This instruction is to motivate music appreciation and participation. The concert band prepares at least two major concerts each year.

All courses of instrumental music meet at least one period each day throughout the school year. Various units may meet additional times after school in preparation for specific programs or participation activities. Private lessons are usually met once each week.

Techniques

1. Tape recorder
2. Record player
3. Transparencies
4. Language Master
5. Filmstrip
6. Electric Metronome

Audio-visual equipment includes stroboconn, tape recorder, portable record player, overhead projector, electric metronome, language master (used in testing program), projection screen, and filmstrip projector.

The instrumental music program is offered to students in grades seven through twelve. The beginning band program is offered during two periods each day. The junior band program is regularly scheduled for one period each day, and the varsity band meets on regular schedule one period each day. Private lessons and small ensembles meet either during activity periods or after school on the average of one lesson each week.

### Evaluation

Each student must be prepared to perform his individual part as a means of evaluating progress. Various individual tests are given throughout the year in the placement of students to chair positions. These individual tests include sight reading as well as tests on prepared materials. Periodic written tests are given to check retention of terms covered in instructional materials. Both student progress and instructional effectiveness may be evaluated through this testing program.

### Text

First Division Band Methods by Tipps, parts one, two and three
scale and rhythm cards

## Philosophy of the Piano Department

Although music has a universal quality, it is one of the individual's most cherished possessions. It is the duty of music educators to create interest, enthusiasm, enjoyment, and the desire to know more. Music is a part of life that is as inescapable as being born. Everyone is musical and creative; and each person differs only in the degree of his talents, his abilities, and his rate of growth.

Music is another means of understanding people of this nation as well as people of the whole world. Because music is the only universal language, its importance continues to increase as our world continues to shrink. We hope to inspire each student to investigate, experiment, and learn. The aim of the piano department is to help students find the joy of self-expression, a lifelong source of enjoyment; to contribute to the intellectual, social, spiritual, creative and emotional growth of students; and to extend their natural equipment for making and enjoying music.

## Objectives of the Piano Department

1. To teach the students the reading of musical notation through the use of proper materials used in a combination of private and class lessons.
2. To teach the students the notes on the piano keyboard and the proper techniques for playing them.
3. To provide the students with keyboard experiences which fulfill their individual needs.
4. To provide the students with opportunities for public performance through programs, recitals, operettas or musicals, auditions, and the Mass Piano Concert.
5. To insist that students practice the art of really listening and seeing rather than just hearing and looking.

6. To encourage the students to attend concerts and other worthwhile musical programs, as well as to point out good things available on television.

7. To provide opportunities for students to perform for each other and give them the opportunity to criticize these performances.

8. To provide the students with a basic knowledge of music theory, literature, history, sight-singing, and conducting.

9. To participate actively in the Jones County Music Teachers' Association, Mississippi Music Teachers' Association, and the National Guild of Piano Teachers.

10. To use students under supervision to present programs for the public in order to develop an awareness of music appreciation.

## Philosophy of Choral Music

Through time, man has come to know himself as a cultural being. He devised methods of governing himself and has, through the years, acquired new knowledge. He shaped the educational channels whereby new generations could benefit from previous knowledge. Inasmuch as music has been and still remains a part of the acquired knowledge and in view of the goal that the education of an individual is to produce a well-rounded person, the choral music philosophy is to teach choral literature of the cultures of mankind. American choral music, local music, and folk music are parts of the culture. Students may increase their aesthetic taste through studies in musical style, tonal perception, rhythmic patterns, qualities of singing, music history, sacred music, group-participation, and creative activities. Choral music contributes in a unique manner what it alone can do in producing the well-educated person.

## Objectives of Choral Music

1. To provide the student with a variety of choral music literature of the past and present.
2. To teach the student tonal perception, vocal technique, breath control, fundamentals of music, and sight-singing through literature appropriate for these needs.
3. To teach the student music history, style in singing, and listening, while learning the music literature chosen for the needs of the students.
4. To promote group-participation in performances before the student body and faculty, as well as in civic, church, and community functions.
5. To provide, through special studies, opportunities for acquiring aesthetical values in musical expression by applying standards required to present a satisfactory performance at district and state choral festivals.
6. To approach music as a wholesome activity and to discover talent and encourage its development.

### Choral Music Instructional Program

Three choral classes for credit are provided in high school. From these classes, performing groups are chosen. It is possible for a high school student to earn two units in music during his four years in school.

Choral music performances include a program at Christmas for the student body, parents and faculty; ensemble programs at civic clubs; and other representative performances by talented students selected for such programs. Choral students participate in the district and state choral festivals.

Significant Features

1. Adequate physical plant for present operation
2. Excellent administrative consideration and cooperation in class schedule preparation
3. Class time available on par with all other classes and activities
4. Majority of equipment on hand of good quality
5. Adequate practice field available for marching
6. Cooperative relationship with other departments within the school

(Example-Fusion of Career Education into academic areas)
CAREER COMPANION GUIDE

Subject & Grade Music 10-12 Text:
Name Publisher Copyright

Career Objective: The student will develop the competence needed to qualify as an instrumentalist in a "group"

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| Reading music and practice on individual musical instruments | Orchestra<br>Stage Band<br>T.V. Commercials<br>Opera Star<br>Organist<br>Pianist<br>Soloist<br>Band Director<br>Music Teacher | Students will meet two, one-hour band lessons for the purpose of learning to sight read music. They will listen to records and tapes by famous artists and will identify rhythm, melodies and various sounds produced by instruments.<br>Ask a local resource person to perform for the class.<br>Have each student write to a favorite musician for information concerning careers. The musician should be one who is an expert on an instrument that the student prefers.<br>Have students make oral reports after researching the background and professional climbing of identified "groups" or individual musicians. | Local musician<br>College or university band member from the local community<br>Television shows<br>Magazines | Demonstration by student in individual and group performances. |

## SCIENCE

### Philosophy

Man lives in a physical world. How well he is able to make himself at home in this world depends on his ability to take advantage of the forces of nature which influence his welfare. Man cannot change nature, but his ability to use nature and her laws to his own advantage is related to his understanding of the physical laws which govern the universe.

In this country, science has become geared to almost every phase of activity. Scientific terminology is used commonly in mass media. It seems that everything must be done "scientifically". As the public is more and more exposed to the language of science, and as science is more and more involved in the economics, political, and social framework of this nation and this civilization, the need for a greater degree of scientific literacy becomes more apparent.

Effort is made to stress the significance of science in the growth and development of civilization. The instructors strive to help the students acquire a meaningful interpretation of their surroundings through appropriate training and knowledge. The department seeks to promote an attitude of investigation and scientific orderliness and to create interests that will lead to further study and profitable employment for the terminal student. Creative scientific thinking is encouraged to arouse a curiosity in both the physical and biological world, thus stimulating further study in those fields.

### Objectives

1. To adequately provide the student with the scientific

knowledges, skills, and attitudes considered essential.

2. To contribute as effectively as possible to a more successfully adjusted individual.
3. To provide a sequence of science courses--general science (grades 7, 8 and 9), biology, chemistry, general physical science, and physics on the senior high level.
4. To properly prepare those who plan vocations requiring a basic and fundamental knowledge of technical science to a limited degree.
5. To show the student the relationship of science to areas such as the individual, the home, the community, and the nation.
6. To interpret for the student certain aspects of the world in which he lives.
7. To dispel superstition and erroneous belief.
8. To help the student develop the ability and the habit of applying scientific methods of thinking to the solution of problems.
9. To help the student develop desirable habits of work and study, including accuracy, thoroughness, persistence, good organization of planning, and neatness.
10. To help the student develop the ability to do household tasks such as repairing, removing stains from clothing and other goods, caring for house and garden plants.
11. To acquaint the pupil with the various sciences.
12. To help the student find whether or not science holds any interest for him and, if so, where his interest lies.
13. To light up fields new to the student and to secure, if

possible, permanent interest in these areas.

14. To help the student build a foundation for higher academic studies and career opportunities.

Physics

The primary objective of the course is to present the science of physics with a directness and a simplicity that will enable the student to achieve maximum understanding. Considerable effort is made to provide a basis for the study of matter, measurement, and various forms of energy (sound, light, heat, electrical, and nuclear). Considerable time is also devoted to the study of mechanics. This area of the science program gives a basic background for those needing a foundation for higher academic studies. Physical laws and principles and their application are stressed. The course should be and is complete enough to offer the materials needed for the college preparatory student, while at the same time effective enough to bring the knowledge of the subject within the reach of students with other objectives.

Since mathematical problems are one of the most serious difficulties encountered in physics, every effort is made to overcome this by leading the individual in easy steps from problems that he can master readily to those that present more difficulty. It is believed that this method creates a sense of achievement.

The course of study involves both subjective and objective methods. Objectively, the laboratory teaching is, first, to develop the individual, and then to teach subject matter by direct experience. Experiments are done in groups of two or more, thus stressing cooperative activities and constructive suggestions in classwork. In summary, the objectives include the following: a thorough study of textbook material, problem comprehension, use of laboratory equipment, application of the scientific method, appreciation of the role physics plays in society, and encouragement of students to continue the study of this physical science in college.

Chemistry

The chemistry course is designed to provide students with an understanding and appreciation of the importance of chemistry in their civilization.

The specific objectives of the Jones County Schools chemistry program are the following:

1. To provide adequate training for those students who plan to pursue additional study beyond the high school level.
2. To create in some the desire to pursue a career in this area or related fields.
3. To relate to the student theoretical and practical information in order to increase the understanding of the student's environment through a knowledge of the nature of matter.
4. To help the student develop an attitude which leads to the scientific approach of problem solving.
5. To give the students a better understanding of the services rendered through chemistry.
6. To teach the students the exactness and orderliness of the subject.

7. To teach the students the development and success of synthetic methods.
8. To introduce to the students the endlessness of the reactions of elements by means of symbols, formulas, equations, structure.
9. To show the students the wide distribution and uses of the elements and their effect on mankind.

In the final analysis, the course in chemistry is concerned with the properties of matter, changes in matter, and the laws or principles which govern these changes.

### Modern Physical Science

Modern physical science is taught primarily for the general-education student, those planning a technical career, and the group who have attending college in mind but are planning to major in a field other than the sciences, mathematics, or engineering.

Laws, principles, concepts, and the like are developed fully but with a nonmathematical approach. Numerous problems are dealt with throughout the course, but these problems involve mainly basic arithmetic skills in order to familiarize the student with a quantitative science. Included are enough basic chemistry and physics to permit an understanding of the simple applications of such sciences as chemical technology, electronics, and other areas of study. The courses at the Jones County High Schools are designed to teach the language of physical science with every effort being made to fulfill the objectives.

### Biology

General biology is offered as a science elective on the senior high level. Two of the courses are standard general biology and the *Biological Sciences Curriculum Study* (Green Version) *High School Biology.*

The study begins with the simple cell. It increases in complexity through one-cell organisms, plants, and lower animals to the human body. It interweaves the history of biology where pertinent.

The course in biology favors the needs of students who are planning to enter college; however, it brings a vast store of knowledge to the terminal student.

The specific objectives of the Jones County Schools biology program are the following:

1. To draw the student into the study of biology by initiating stimuli to his innate curiosity.
2. To relate the student to the living world, to the inanimate, and to the interrelationship of all.
3. To aid the student in developing techniques in the use of the microscope, the general scientific methods, and the potential of individual projects.
4. To initiate a study of chemistry relative to living organisms and to stimulate a systematic review in each applicable facet.
5. To avoid isolation of singular facts and necessity of overpowering, rote memory work.
6. To bring into focus the biosphere in interrelationship of the single cell through plant and animal life.
7. To interweave into the year's work some of the prominent history of biology.

8. To demonstrate to the students principles of other related sciences for class observation.

9. To discuss in pertinent situations current events and encourage awareness in all news media relative to biology.

10. To begin the use of the metric system.

11. To aid students in developing a better technique in the art of taking science notes.

12. To initiate the awareness of patterns in the biosphere.

13. To introduce to the students the basic structure in both simple cells and anatomy and the basic functions with their interrelationships in the human body; also, to relate disease organisms to the body and to increase interest in the care and protection of the body.

14. To introduce to the students the nomenclature of biological classification.

15. To increase the students' knowledge of biology.

Techniques

The textbooks are Modern Biology by Otto and Towle and Biological Sciences Curriculum Study (Green Version) High School Biology. A variety of laboratory manuals are used with emphasis on Biological Sciences Curriculum Study Laboratory Blocks.

Collections of individual plants and animals are required when the materials are being discussed in class and laboratory experiments are being conducted relative to them. Excellent laboratory equipment includes glassware for microtechnique, autoclave, models, dissecting equipment, chemicals, charts, library, live animals and equipment for their care, microscopes and living and preserved specimens.

The laboratory is set up so that individuals have space for singular projects and so that they may work at tables in units of two or four as the projects require.

Special emphasis is placed on increasing the students' ability to take notes in lecture and laboratory.

The students are tested on laboratory and lecture material.

## Description

The Science Departments of Jones County High Schools provide a continuous program of science instruction from the seventh through the twelfth grades. The courses are designed to meet the needs of the prospective college student as well as those with no more formal education in mind.

All students are required by state and county accrediting regulations to have completed, upon graduation, two units of science. The boys may substitute agriculture for one unit and the girls, home economics. In the junior high school, science is required of all seventh graders while those in the eighth grade have a choice of science, shop, or home economics. The ninth through the twelfth grades may continue in the science sequence program. The college-bound prospects are encouraged to take more than the minimum number of required courses in science.

Each science course meets a total of five sixty-minute periods per week throughout the school year.

The program of studies for Jones County High School Science Departments provides the course offerings in biology (mainly grade 10), modern physical science (grades 11 and 12), chemistry (grades 11 and 12), and physics (primarily for seniors). One unit of credit is awarded upon successful completion of each.

Techniques

The methods of procedure are important in that they make possible the operation of effective principles of science teaching. A great deal of variation would, as expected, be noted in the techniques of materials and instruction. In order to have an efficient learning process the following materials are utilized:

1. Textbooks and laboratory manuals
2. Laboratory experiments
3. Lecture and discussion
4. Charts, tables, models, posters, diagrams
5. Library and audio-visual reference materials
6. Films and filmstrips
7. Transparencies
8. Demonstrations
9. Visiting science speakers
10. Printed materials from commercial sources
11. Student reports
12. Normal facilities available in science classrooms such as chalkboards, bulletin boards
13. Project work such as plant and animal collections, exhibits

14. Microscopes

15. Aquariums

The instructional techniques consist of informal lectures, question and answer sessions, general discussion, correlated readings, laboratory experiences, research, and items from the preceding list such as visiting scientists.

Methods of Evaluation

Evaluation is necessary in any learning experience. Effort should be made by students as well as teachers. Since some achievements, in terms of the objectives, are more easily measured than others, a variety of techniques should be applied. Methods of evaluating student progress include tests, laboratory work, reports, problem solving, projects, and research papers.

The testing program includes numerous types of exams that serve as learning devices as well as evaluation tools. Cumulative records are kept by the guidance director to show continuous growth, progress, and development of the individual. Emphasis is placed on functional understanding of laws and principles along with mastery of known and proven facts.

The evaluative machinery keeps score on the individual in order to focus attention on the pupil's progress. This is accomplished through valid and reliable tests along with observation of the student's classroom activities, laboratory effectiveness, and processes as listed above.

Significant Features

1. The majority of teachers have recently participated in National Science Foundation Institutes, which have provided background study in areas taught.
2. Participation of visiting scientists-lecturers demonstration programs in cooperation with the Mississippi Academy of Science is a part of the program.
3. Arrangement and convenience of science rooms and storerooms lend to the effectiveness of the program.
4. Current scientific publications are used in order to up-date course material.
5. Student lectures-demonstrations serve a worthwhile purpose.
6. Available audio-visual materials are utilized.
7. Cooperation and rapport among department members are excellent. There is a mutual sharing of equipment whenever necessary.

Texts:

Gregory, Kintz and Drury. High School Biology. Chicago, Illinois: Rand, McNally and Co., 1966.

Otto and Towle. Modern Biology. Dallas, Texas: Holt, Rinehart, and Winston, Inc., 1969.

(Example-Fusion of Career Education into academic areas)
CAREER COMPANION GUIDE

Subject & Grade Biology - 10 Text: ______ Name Publisher Copyright

Career Objective: To have interested students evaluate career opportunities in the plant science module.

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| Horticulture | Landscape architect<br>Gardener<br>Nursery manager<br>Retail Florist<br>Tree Surgeon<br>Truck farmer<br>Horticulturist<br>Floriculturist<br>Botanist<br>Plant pathologist<br>Agronomist<br>(List of careers would depend on interests of students) | Suggest that students, individually or in small groups, research a career of interest. Information about occupational duties, requirements, training, salaries, and rewards might be presented in career booklets, bulletin board displays, panel discussions, or in other ways devised by students. In addition to these reports, have each group design and present a demonstration project exemplifying some aspect of the work performed in the occupation being studied. For example:<br>Botanist - Develop a chart showing different means of classifying plants.<br>Florist - Demonstrate potting of plants in a decorative indoor planter or terrarium.<br>Landscape architect - Develop several drawings showing alternative ways to landscape the school grounds. | Reference books on horticulture and related occupations<br>OEK briefs materials for charting and audiovisual production<br>bulletin boards | |

# CAREER COMPANION GUIDE

Subject & Grade Biology - 10 Text: ______
Name Publisher Copyright

Career Objective: ______

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| | | Floriculturist - Develop a series of charts illustrating cross-pollination methods and genetic principles used to develop new flower strains. | | |

## SOCIAL STUDIES

### Philosophy

It is the general and accepted belief that we live in a period of history that is far different from any of the civilized world. We, therefore, are confronted with challenges that no other society has had.

The social studies teachers realize that education is a continuing process of development to prepare the individual to meet these rapid social changes. They also feel that this is an important field that causes one to see the responsibility that he faces in relation to his family, community, state, nation and the world as a whole.

The challenge of social studies teachers is to help educate a generation of citizens to make wise decision in bearing the heavy responsibility of a continuing society in a highly scientific surrounding.

Social studies strives to contribute a variety of understandings, an attainment of proper attitudes, and a development of skills that will help individuals live together peacefully in a complicated world.

### Objectives

The objectives of the Social Studies Department of the Jones County High Schools agree with those established by the State Department of Education.

1. To enable students to live better in a social and physical environment.
2. To develop a civic responsibility and a social concern for the functions of a group.
3. To help the student understand and appreciate the values of

the American heritage.

4. To help the student understand his debt to society by appreciating what others have done for him in the past.
5. To help the student develop the democratic ideals that are necessary for the patriotism for one's country which was founded upon freedom.
6. To help the student develop an understanding of how the development of other nations has contributed to the growth of America.
7. To help the student to identify ways that depressed conditions lead to social problems and destruction.
8. To help the student acquire skill in research.
9. To make the course of study as interesting, as relevent and as useful as possible.

## Organization

World History, an elective course, is a panorama of man's development from prehistoric times to the modern space age. Stress is placed on the various world movements that have affected mankind and his development. An understanding of the achievement of man is essential with the view that man has achieved more than he has destroyed. The purpose of this course of study is to prepare students to understand the world they are to face through a thorough understanding of its development.

American History, a required course taught in the eleventh grade, is designed to give students a knowledge of the growth of American political, economic, and social institutions from the early days of exploration and discovery to contemporary times. An attempt is made to stress great movements which may either be uniquely American or worldwide in origin. This course carries one-unit credit.

Challenge, an elective course offered in the twelfth grade deals with the personal, economic, social, and political problems that face young people in a democratic society today. These problems are presented in the form of a challenge closely related to the interests and experiences of high school seniors. Students are urged to think for themselves and to make careful and thorough preparation for constructive actions. This course carries one-half unit credit.

Economics, an elective course recommended for seniors, is a study of the free enterprise system with emphasis on the more practical aspects: how we make a living, how goods and services are produced, banking and credit, factors in determining prices, sharing what we produce with other nations, some problems in labor-management, the tax structure, our relations with other nations, maintaining a stable economy, and our personal use of money and natural resources. This course carries one-half unit credit.

American Government, a required course taught in the twelfth grade, is designed to give the student a basic concept of the federal system of American government. Since the United States Constitution is the basis of the nation's form of government, stress is placed upon its formation, as well as its meaning, to meet the needs and rights of a free people. Stress is placed upon the origin, development, organization, powers, and actual workings of American government.

An attempt is made to make the student aware of Communism and its threat to a free society. This course carries one-half unit credit.

## Techniques

Teaching techniques include lectures, filmstrips, guest speakers, and the use of library materials. Lecturing is used in various combinations with other methods. Most factual material is covered by lecture. Problem solving and discussion are used to form hypothetical conclusions.

Current events and related topics of current interest account for much of the discussion and for approximately 15 to 20 % of the class time. Discussions cross barriers of race, politics, religion, economics, and government.

Projects to promote the use of library and research facilities vary with ability and with the field of study. The degree of difficulty ranges from word definitions in the seventh grade to extensive research and application at the senior level.

## Methods of Evaluation

Both oral and written tests are used for measuring as well as for teaching. Oral testing in the form of questions and discussions are used to promote interest and individual participation throughout the unit. Written tests are given at intervals that coincide with time and the unit being taught. Tests are administered to evaluate and promote knowledge, skills, understanding, and appreciation.

Significant Features

1. Discussions on controversial subjects by members of various races, religions, economics levels, and political views.
2. Supervised trips for history students to state locales of historical importance.
3. The use of outside speakers and visiting guests.
4. The use of coordinated filmstrip series on some sections of American and world history.
5. Historical book reports and research work.
6. Open exchange of ideas and methods among social studies teachers.
7. Discussions of the happenings in other places and times that have a bearing on the present local populace.

(Example-Fusion of Career Education into academic areas)
CAREER COMPANION GUIDE

Subject & Grade American History - 11th Grade      Text: ______ Name ______ Publisher ______ Copyright

Career Objective: The student will be able to identify and relate to the wide range of careers in the legal system of our country

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| Legal System | Judge<br>Attorney<br>Policeman<br>Coroner<br>Court reporter<br>Other careers will be explored as nature of the case dictates. | Through discussion, evaluate students' knowledge of various occupations involved in our legal system. Invite students to describe the work of judge, attorney, policeman, coroner, court reporter, etc.<br>Arrange with a local or county judge to have your class attend a court session. Before you visit the courtroom have the students form interest groups according to the various occupations involved in the legal system. At the session, have them observe all of the principals involved, particularly the representatives of their occupational selection. After the session is over, try to arrange for the various interest groups to interview the court personnel about their careers. Students might tape these interviews for use in researching the culminating activity.<br>Have students read an actual court transcript if one can be obtained. | OEK briefs on legal careers -<br>court transcript (if available)<br>props for mock trial | |

# CAREER COMPANION GUIDE

Subject & Grade American History - 11th Grade Text: ______ Name Publisher Copyright

Career Objective: ______

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
|  |  | Engage students in planning a mock trial. Divide the class into groups, according to their interest areas. At this point, one group should invent the crime. When the circumstances of the crime have been developed, ask another group to write newspaper stories and editorials about it. Select individuals to play the roles of plaintiff, defendant, arresting officer, witness, judge, attorney, etc.<br>Have students research their roles. For example, the lawyers for the defense and prosecution should build their prospective cases. If, for instance, the mock trial involves a man who was hit in the neck with a golf club, the doctor will have to research the neck area in order to give convincing testimony. The policeman who just arrived on the scene of the incident will have to research police reports. The judge will have to research court procedure and the various |  |  |

## CAREER COMPANION GUIDE

Subject & Grade American History - 11th Grade Text: ______ Name Publisher Copyright

Career Objective: ______

| Unit of Study | Careers and/or Career Related Information | Career Related Instructional Procedures | Resources or Materials | Method of Evaluation |
|---|---|---|---|---|
| | | sentences. The clerk will research his job, and so on for each role. | | |

# APPENDIX

## 69: YOUR BODY AND HOW TO TAKE CARE OF IT

**A PRIMER OF PHYSIOLOGY** covering topics related to good health and the proper cultivation of constructive habits that insure natural development. Designed to help students comprehend the vital functions of the human body and learn the measures required to maintain perfect health. [I/J]

| | | | |
|---|---|---|---|
| 69A | **Take Care of Your Health** | 69F | **Your Eyes** |
| 69B | **Your Bones and Muscles** | 69G | **Your Ears and Hearing** |
| 69C | **Your Lungs and How You Breathe** | 69H | **Your Teeth** |
| 69D | **Your Heart and Circulation** | 69 I | **Man's Battle Against Disease** |
| 69E | **The Digestive System** | | |

F69: Complete set of 9 captioned color filmstrips with
teacher's manual
Individual filmstrip

## X228: FIRST AID AS IT HAPPENS

In the event of an accident, a knowledge of first aid can save a life. This series of six sound filmstrips can help to make the teaching of this important subject more realistic and effective. The strips closely follow the organization of any First Aid course. With the further assistance of the local police, fire department and hospital, a succession of accidents are realistically enacted and the appropriate responses explained in detail. [J/S]

| | |
|---|---|
| X228A | **Procedures at the Scene of an Accident** |
| X228B | **Bleeding, Wounds, and Special Emergencies** |
| X228C | **Artificial Respiration** |
| X228D | **Poisoning, Burns and Injuries to Bones** |
| X228E | **Bandaging** |
| X228F | **Transportation of an Injured Person** |

•T• TX228: Complete set of 6 sound filmstrips with 3 cassette
Teach-A-Tapes and teacher's manual

◐ DX228: Complete set of 6 sound filmstrips with 3 records
and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## 117: OCCUPATIONAL EDUCATION

This series of nine filmstrips deal directly with the problem of helping the slow learner to contribute to the environment in which he will be living and working. The skills presented here will fit the student with the necessary tools for him to be able to reach his maximum level of vocational competency. The filmstrips lend themselves to integration with other courses of study in the curriculum. Now the student can see and learn about the jobs that he feels may be within his limit of skill and understanding. These filmstrips open the way for excellent discussion with the slow learners. Good training material. [J/S]

| | | | |
|---|---|---|---|
| 117A | **The Job Interview** | 117F | **The Variety Store** |
| 117B | **Stocker in a Super-Market** | 117G | **The School Cafeteria Worker** |
| 117C | **The Waitress** | 117H | **The Nurses Aid** |
| 117D | **Fixing a Flat Tire** | 117 I | **The Gas Station Attendant** |
| 117E | **How to Use Your Checkbook** | | |

•T• TF117: Complete set of 9 captioned color filmstrips with
5 cassette Teach-A-Tapes and teacher's manual

F117: 9 captioned color filmstrips with teacher's manual
Individual filmstrip
Individual cassette

## X204: MARRIAGE FROM ROMANCE MAGAZINE TO REALITY

This set of 6 color filmstrips talks realistically without either trite stock answers or hard cynicism. Love and marriage is dealt with as an emotion and relationship that hopefully matures. Accepting the fact that the divorce rate ranges from 25% to 33% this material helps the students take a more realistic look at mate selection and marriage. Presents an opportunity for further discussion about aspects of marriage. Can be used with Home Economics, Family Living and Guidance studies. [S/C]

| | | | |
|---|---|---|---|
| X204A | **Marriage: Why? Whom? When? How?** | X204D | **Budgets and Reality** |
| X204B | **Living with Others** | X204E | **Children and Reality** |
| X204C | **Living Together** | X204F | **Success and Divorce** |

•T• TX204: Complete set of 6 color filmstrips with 3 cassette
Teach-A-Tapes

◐ DX204: Complete set of 6 color filmstrips with 3 records
records
Indivisual filmstrip
Individual cassette
Individual record

## 9-2: GUIDANCE FOR YOUNG PEOPLE

Here is a reliable set of sixteen sound filmstrips planned to help start discussions with Intermediate, Junior and Senior High young people. Raising questions about lying, cheating, love, honor and respect, these stories open channels for discussion in areas too sensitive to raise with examples from your own classes. Listed with the title of each filmstrip below is the subject and grade level.

| | | | |
|---|---|---|---|
| 9-2A | **The Compass (I/J) (Habit of lying)** | 9-2 I | **How Big Is Love (I/J) (Children in family)** |
| 9-2B | **The Golden Rule (I/J) (New friends)** | 9-2 J | **No One will Know the Difference (I/J) (Cheating)** |
| 9-2C | **Squaring Yourself (I/J) (Stealing)** | 9-2K | **Courage (I/J) (What is courage)** |
| 9-2D | **An Acted Lie (I/J) (Lying)** | 9-2L | **Reliability Zero (I/J) (Dependability)** |
| 9-2E | **Perspective (J/S) (Understanding Oneself)** | 9-2M | **Honor Thy Father and Thy Mother (I/J) (Character vs Origin)** |
| 9-2F | **A Vacation Trip (J/S) (Goals for success)** | 9-2N | **Stewardship (I/J) (Time and Money are important)** |
| 9-2G | **Consequences (J/S) (Your actions affect many)** | 9-2O | **He Lost His Head (I/J) (Temper)** |
| 9-2H | **Getting Even (J/S) (Repay wrong with right)** | 9-2P | **A Big Decision (J/S) (Truth and sportsmanship)** |

•T• TF9-2: Complete set of 16 color filmstrips with 8 cassette
Teach-A-Tapes and teacher's manuals

◐ DF9-2: Complete set of 16 color filmstrips with 8 records
and teacher's manuals
Individual filmstrip
Individual cassette
Individual record

## H356: HUMAN SEXUALITY

A series offering students an awareness of the physical and psychological drives with insights into how they should be handled. The photography is both imaginative and poetic to create the climate to present this material. The guide for each filmstrip follows the "end" frame. [J/S]

| | |
|---|---|
| H356A | **Our Instincts and Why We Have Them** |
| H356B | **The Male of the Species** |
| H356C | **The Female of the Species** |
| H356D | **Are Love and Sex the Same Thing?** |
| H356E | **Attitudes About Human Sexuality** |
| H356F | **Marriage and Families** |

•T• TH356: Complete set of 6 color filmstrips with 3 cassette
Teach-A-Tapes

◐ DH356: Complete set of 6 color filmstrips with 3 records
Individual filmstrip
Individual cassette
Individual record

## X211: "LET THE BUYER BEWARE"

This set of six color filmstrips is designed to provide the basic information adults and young people require concerning consumer education. Adult terms and concepts are presented through examples and situations that become meaningful to students. [I/J]

| | |
|---|---|
| X211A | **Everything is Not What it Appears to Be** |
| X211B | **Can You Believe Advertising?** |
| X211C | **Johnny Has One!** |
| X211D | **Measures, Values and Bargains** |
| X211E | **Use, Quality and Service** |
| X211F | **Is it Safe!** |

·T· TX211: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes

○ DX211: Complete set of 6 color filmstrips with 3 records
Individual filmstrip
Individual cassette
Individual record

## 7-3: IT'S YOUR FUTURE

**IT'S YOUR FUTURE** offers constructive guidance in helping students avoid two of the most worrysome pitfalls:

1. Indifference regarding the importance of an education.
2. Faulty methods of study.

| | |
|---|---|
| 7-3A | **A Look at the Future** |
| 7-3B | **In Training** |
| 7-3C | **Seeing the Whole Picture** |
| 7-3D | **Know-How and Your Future** |

This series motivates interest among class members most inclined to be indifferent and unappreciative . . . (a timely documentary almost certain to provoke awareness and personal responsibility). Written by Bernard F. Wetzel of Allentown College, Pennsylvania, an authority on the subject with twenty-five years of seasoned high school teaching experience.

**A SET OF FOUR** sound filmstrips relating long-range attainment objectives to better-directed study methods . . . a timely message that strikes home and leaves an indelible impression on potential student dropouts . . . a dramatic visual presentation prompting the "drifters" to do something—**NOW**—before it's too late. [J/S]

·T· TF7-3: Complete set of 4 color filmstrips with 2 cassette Teach-A-Tapes and teacher's manual

○ DF7-3: Complete set of 4 color filmstrips with 2 records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## X239: BEING SAFE

This set is designed to instill a basic attitude in each child which should help protect him from the physical dangers surrounding him. It presents the basic ideas of safety—think ahead to what could happen, use things properly and only for the use they are designed for, look before you move, don't use equipment unless you have been taught how, don't play near certain things, don't ever touch a few things—be aware of what could happen. The set deals with cars, trucks, bicycles, pedestrians, crossing streets, walking, playing, swimming, skating, other sports, climbing into, getting under, train tracks, high places, caves, culverts, electricity, fire, poisons, animals, drugs and strangers. It tells the child what not to let happen as well as what to do if it should. [K/P]

| | |
|---|---|
| X239A | **Think Safe—Act Safe** |
| X239B | **Cars, Bikes and People** |
| X239C | **Delicious or Deadly?** |
| X239D | **Watch Where You Go** |
| X239E | **Fun or Fearful?** |
| X239F | **Helpful or Harmful?** |

·T· TX239: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes and teacher's manual

○ DX239: Complete set of 6 color filmstrips with 3 records -4
and teacher' manual
Individual filmstrip
Individual cassette
Individual record

## X212: THINKING CLEARLY

Designed to develop thinking strategies that will help young learners observe and interpret information. This set will present to the young learner incorrect and incomplete pictures such as a car without wheels. He is asked to relate and find objects in his environment such as a telephone in a room; and he is also asked to relate objects with their function such as an umbrella to a rainy day. Analogies are made such as a bathing suit to summer — a snowsuit to winter — students are asked to categorize such items as a candle, boy, cake in a birthday party — and complete the picture.

| | |
|---|---|
| X212A | **Inconsistencies** |
| X212B | **Objects and Environments** |
| X212C | **Objects and Functions** |
| X212D | **Finding Objects** |
| X212E | **Analogies** |
| X212F | **Categories** |

·T· TX212: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes and Teacher's manual

○ DX212: Complete set of 6 color filmstrips with 3 records and Teacher's manual
Individual filmstrip
Individual cassette
Individual record

## B350: DON'T JUST STAND THERE! DO SOMETHING

A basic introduction to the major causes of pollution for all Grade 3-7 students. This four filmstrip set is based on the successful book by Senator Gaylord Nelson, "What Are Me and You Gonna Do?" Vivid original color photographs and excerpts from students' letters—as reported on national television—examine the causes of AIR, LAND and WATER pollution. One filmstrip reviews man's present efforts to combat pollution. Practical suggestions as to how your students may join in the necessary fight against pollution right now, are made. A Teacher's Guide is provided on the end frames of each filmstrip. [I/J]

| | |
|---|---|
| B350A | **Air Pollution** |
| B350B | **Land Pollution** |
| B350C | **Water Pollution** |
| B350D | **Fighting Pollution** |

·T· TB350: Complete set of 4 color filmstrips with 2 cassette Teach-A-Tapes

○ DB350: Complete set of 4 color filmstrips with 2 records
Individual Filmstrip
Individual cassette
Individual record.

## 7-1: STUDYING FOR SUCCESS

The Introductory Captioned Filmstrip, "HOW DO YOU RATE?", is designed to inspire all students into analyzing their lesson study habits and inaugurating positive measures for improvement. The other 10 sound filmstrips in the set demonstrate how proficient study techniques are related to attentiveness and classroom attitudes. Three specific areas of study have been selected for extensive application and review: language arts, mathematics, and science. [J/S]

| | |
|---|---|
| 7-1A | **How Do You Rate? (Captioned)** |
| 7-1B | **Developing Good Classroom Attitudes** |
| 7-1C | **Taking Better Notes** |
| 7-1D | **Budgeting Your Time** |
| 7-1E | **Studying at Home** |
| 7-1F | **Improving Your Reading** |
| 7-1G | **Reviewing for Examinations** |
| 7-1H | **Taking Examinations** |
| 7-1 I | **How to Study a Foreign Language** |
| 7-1 J | **How to Study Mathematics** |
| 7-1K | **How to Study Science** |

·T· TF7-1: Complete set of 11 color filmstrips with 5 cassette Teach-A-Tapes and teacher's manual

○ DF7-1: Complete set of 11 color filmstrips with 5 records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## X219: THE FINANCIAL MARKETPLACE

Introduces the student to various financial institutions in our economy; shows the student the different forms a business may take; and gives the student an understanding of the different methods a business may use to raise and apply capital. [J/S]

| | |
|---|---|
| X219A | **Institutions We Deal With** |
| X219B | **The Different Forms of Business** |
| X219C | **Going Into Business** |
| X219D | **What is the Stock Market** |
| X219E | **How does the Stock Market Work?** |
| X219F | **What it Means to You** |

·T· TX219: Complete set of 6 color filmstrips with 3 cassette Teach-S-Tapes

○ DX219: Complete set of 6 color filmstrips with 3 records
Individual filmstrip
Individual cassette
Individual record

## 178: FUNDAMENTALS OF ECONOMICS

(FREEDOMS FOUNDATION AWARD)

**ONE IMPERATIVE** to a better understanding of our democratic form of government is an understanding of our economic institution. Some basic elements of the dynamics of these institutions are covered in this series of 8 sound filmstrips. The script vividly and skillfully presents economics in an interesting fashion on the accompanying records. [I/J/S]

| | | | |
|---|---|---|---|
| 178A | **What is Economics?** | 178E | **Business Organization** |
| 178B | **Money** | 178F | **Labor and Labor Unions** |
| 178C | **Taxes** | 178G | **Credit Buying** |
| 178D | **Banks and Banking** | 178H | **Population** |

·T· TF178: Complete set of 8 color filmstrips with 4 cassett Teach-A-Tapes and teacher's manual

○ DF178: Complete set of 8 color filmstrips with 4 records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## 5-1: MATHEMATICS IN ACTION

These filmstrips have been designed to serve as an aid in the presentation of certain pre-algebra mathematical topics. Every effort has been made to make the material sequential and logical without being programmed.

**MATHEMATICS IN ACTION** provides a great deal of subject matter presented in eight segments which will create classroom discussion and enlightenment. [J]

| | |
|---|---|
| 5-1A | **Graphs** |
| 5-1B | **The Metric System** |
| 5-1C | **Latitude and Longitude** |
| 5-1D | **Statistics** |
| 5-1E | **Sets and Probability** |
| 5-1F | **Probability and Insurance** |
| 5-1G | **Percent, Discount, and Commission** |
| 5-1H | **Stocks** |

F5-1: Complete set of 8 captioned color filmstrips with teacher's manual
Individual filmstrip

## X203: MANAGING THE FAMILY'S AFFAIRS

The subjects in this set of 12 color sound filmstrips, are covered pragmatically. In each instance, direct experience with situations is presented and concrete solutions or methods of solution are suggested. The set can be best described by the titles of each filmstrip. Useful for Home Economics, Family Living Courses, and Guidance. [S/C]

| | |
|---|---|
| X203A | **Learning to Live Together** |
| X203B | **The New Home** |
| X203C | **The Budget—Today and Tomorrow** |
| X203D | **Cash and Credit** |
| X203E | **How to Shop** |
| X203F | **"Just Sign Here"** |
| X203G | **As the Family Grows** |
| X203H | **The Family and Its Legal Rights** |
| X203I | **The Family and Its Legal Responsibilities** |
| X203J | **Protecting What the Family Has** |
| X203K | **The Family and Community** |
| X203L | **"Help! This is an Emergency"** |

·T· TX203: Complete set of 12 color filmstrips with 6 cassette Teach-A-Tapes

○ DX203: Complete set of 12 color filmstrips with 6 records
Individual filmstrip
Individual cassette
Individual record

## X213: THE ESSENCE OF ACCOUNTING

This set of six color, sound filmstrips is designed to introduce the student to the need for Accounting and to the general terminology used in basic Accounting. It also gives the student an understanding of some of the basic business reports that are the by-product of Accounting procedure.This material is designed to assist and supplement most basic texts and approaches to the teaching of Accounting.

| | |
|---|---|
| X213A | **Why We Keep Records** |
| X213B | **"The Books" and What They Are** |
| X213C | **Recording Transactions: How** |
| X213D | **Recording Transactions: Where** |
| X213E | **Using These Records** |
| X213F | **The Accounting Cycle** |

·T· TX213: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes and teacher's manual

○ DX213: Complete set of 6 color filmstrips with 3 records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## X217: ACCOUNTING IN THE BUSINESS WORLD

This set is designed to introduce and familiarize the student with the major accounting statements and to explain the need and use of these statements in the everyday business world. Applicable to all Accounting programs regardless of text and approach, this set of six filmstrips will assist in bridging the gap between the Accounting classroom and the real business world. This material is essential for business and pre-college students. [S/C]

| | |
|---|---|
| X217A | **What You Need to Know** |
| X217B | **Not Running Out of Money** |
| X217C | **A Guide to Business Performance** |
| X217D | **How Did You Really Do?** |
| X217E | **Assets and Liabilities** |
| X217F | **What You're Really Worth** |

·T· TX217: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes and teacher's manual

○ DX217: Complete set of 6 color filmstrips with 3 records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## X207: LIVING WITH COMPUTERS

This set of six color filmstrips is designed to introduce to the secondary school student a basic understanding of the nature of the computer and the myths and fallacies that have grown up around these "electronic brains." This set of filmstrips features a glossary of computer terminology and illustrates the role of the computer in our society and the rapidly developing vocational choices available in the computer industry. The titles are as follows:

X207A **Computers Can't Think**
X207B **Programming**
X207C **Putting the Work In**

X207D **Getting the Work Out**
X207E **Garbage In—Garbage Out**
X207F **For Good and Bad**

·T· TX207: Complete set of 6 color filmstrips with 3 cassette Teach-S-Tapes and teacher's manual

○ DX207: Complete set of 6 color filmstrips with records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## 7-5: THE A. B. C. 's OF GETTING AND KEEPING A JOB

This series of 8 sound filmstrips can be used in conjunction with such subjects as vocational guidance, occupational education, basic adult education, and social studies. Included in the series is a complete teacher's manual containing six unit plans and one sample comprehensive final examination. This series is designed for the non-college bound student. [J/S]

7-5A **The ABC's of Getting and Keeping a Job**
7-5B **Preparing for the Job You Want**
7-5C **Applying for the Job You Want**
7-5D **On the Job**

7-5E **Budgeting Your Money**
7-5F **Labor Unions**
7-5G **Health Rules to Follow**
7-5H **Quizstrip**

·T· TF7-5: Complete set of 8 color filmstrips with 4 cassette Teach-A - Tapes and teacher's manual

○ DF7-5: Complete set of 8 color filmstrips with 4 records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## U250: DISTRIBUTIVE EDUCATION: SELLING AS A CAREER

Although designed for high school students who may choose a career in sales after graduation, this series is of value to college-bound students as well. For as the filmstrip "selling as a career" indicates, all of us are continually engaged in selling, whether it be products, services, ideas, or "ourselves." The series provides a comprehensive insight into the entire field of marketing, including retail, wholesale, and service. [S]

U2501 **Selling as a Career**
U2502 **The Economics of Selling**
U2503 **Your Person and Personality**
U2504 **Know Your Product**

U2505 **Why People Buy**
U2506 **Selling Techniques**
U2507 **Objections and Objectives**
U2508 **New Horizons in Selling**

·T· TU250: Complete series of 8 color filmstrips with 4 cassette Teach-A-Tapes and teacher's manual

○ DU250: Complete series of 8 color filmstrips with 4 records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## W401: ANCIENT CRAFTS—MODERN TIMES

Six SOUND filmstrips bring the wonder of specialized craftsmanship to the attention of students interested in the beginnings of such crafts and affords an opportunity to see the beauty of some of the contemporary works of various artisans.

There are step-by-step instructions and explanations of how various methods are employed to create intricate and delicate designs—how once-crude processes contributed to our present day accomplishments—how a craftsman's individual creative talent influences the choice as to just how a particular product should be finished. The skills of the Silversmith, Glassmaker, Cabinetmaker, Textile Designer, Graphics Designer and Potter are all illustrated to educate the student as to the importance of these time-honored crafts and their development to modern times. [I/J/S]

W401A **The Potter—Beauty in Clay**
W401B **The Graphics Designer—Art in Print**
W401C **The Cabinetmaker—Sculpture in Wood**

W401D **The Textile Designer—Woven Art**
W401E **The Glassmaker—Transparent Creations**
W401F **The Silversmith—Metallic Art**

·T· TW401: Complete set of 6 color filmstrips with 6 cassette Teach-A-Tapes and teacher's manual

○ DW401: Complete set of 6 color filmstrips with 6 records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## X216: LEISURE TIME: BUSY OR BORED?

Leisure time and what to do with it is rapidly becoming a national crisis. Many experts say we have too much—a major problem; others say we have too little—a major problem. The only thing one can agree on is that it is a problem for most people.

Studies in this subject are almost all statistical and deal with "people." Leisure time is an individual problem that needs individual understanding and each individual has to find his own answers to it. This set puts the problem firmly in the lap of the individual student and gives him some guide lines for reaching his own solutions . . . what is leisure time really? [J/S]

X216A **Work for What?**
X216B **Killing Time and Yourself**
X216C **Free Time is Not So Free**

X216D **Leisure on a Shoestring**
X216E **Have You Tried————?**
X216F **Time to Be Yourself**

·T· TX216: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes and teacher's manual

○ DX216: Complete set of 6 color filmstrips with 3 records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## 61: THE STORY OF BUILDING A HOUSE

**A MODERN DAY STORY** of building a home in suburbia. The filmstrips trace the beginning, from digging the foundation to showing the complex things required in building even the most basic of structures. [I/J]

61A **How it Started**
61B **Excavating the Cellar**
61C **Building the Foundation**
61D **Building the Frame of the House**
61E **Gas, Electric, Plumbing, and Other Installations**

61F **Further Installations**
61G **Completing the Outside of the House**
61H **Completing the Inside of the House**
61 I **The House is Built**

F61: Complete set of 9 captioned color filmstrips with teacher's manual
Individual filmstrip

## 202: ME, MYSELF AND I

**A SIMPLE, ELEMENTARY COURSE** which presents the basic principles of psychology. It is designed to supplement the new elementary guidance programs. This program meets a vital need as it gives support to psychologists, counselors, and teachers interested in preventive guidance. Use one or more filmstrips with each session. Can also be used with adult groups who wish to discuss children's problems. [I]

202A **Who Am I**
202B **Why Do My Feelings Change**
202C **What Can I Do About It**
202D **How Can I Improve Myself**
202E **What About Other People**
202F **Where Do We Go From Here**

•T• TF202: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes and teacher's manual

○ DF202: Complete set of 6 color filmstrips with 3-7 inch records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## 241: GUIDES FOR GROWING

A new way to open discussion about drugs and race. Teach the importance of truthfulness without preaching. Teach about ecology on a level the primary or intermediate child can discuss. Judie Berke has developed these fairytale stories with whimsical and exciting characters. They will teach with you — without the heavy handed pedantic approach. All ages will find this series to have charm, interest and tremendous value. The unusual art style crosses age lines. Use these sound filmstrips for motivation. They will lead to discussion and concerned learning about the sensitive problem areas of our society. Travel with the Indian Princess Ecol to discover what the earth may be like in years to come; go with Fat Black Mack to "Cat U" and learn the importance of education to establish self respect; discover with your students the dead end world of Mary Jane the Butterfly as she is caught in the web of drugs.
An excellent series for reading readiness as well as guidance. [P/I]

241A **Princess Ecol Visits the Planet Thrae (Ecology)**
241B **Miles Mugwump and Frannie Frantic (Decision Making)**
241C **Mary Jane, the Butterfly (Drugs)**
241D **Lewis-Lies-A-Lot Meets the Snapping-Grant-Giver (Truth)**
241E **Fat Black Mack (Minorities)**
241F **The Blue Gootches (Color Lines)**

•T• TF241: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes

○ DF241: Complete set of 6 color filmstrips with 3 records
Individual filmstrip
Individual cassette
Individual record

## X238: VALUES

The student of today questions adult standards and values. This set is designed to assist the young learner in developing a standard of values. Each filmstrip will explore areas of social conflict. Both appropriate and inappropriate responses will be given without a judgment being made. The students can be asked to role play or discuss each problem and response, hence developing their own answers and formulating their own set of values. **[K/P]**

X238A **Telling the Truth**
X238B **What is Stealing?**
X238C **Kindness**
X238D **Politeness**
X238E **Responsibility**
X238F **Citizenship**

•T• TX238: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes

○ DX238: Complete set of 6 color filmstrips with 3 records
Individual filmstrip
Individual cassette
Individual record

## 151: THE FUNDAMENTALS OF THINKING

**A FILMSTRIP SERIES ON THINKING** . . . a unique topic developed from the original research and theory of Dr. Louis E. Raths, distinguished service Professor of Education, Newark State College, Union, N. J. This potential learning concept is outlined in nine filmstrips devoted to nine basic thinking skills. [I/J]

151A **Comparisons**
151B **Assumptions**
151C **Classifying**
151D **Critical Thinking**
151E **Problem Solving**
151F **Interpreting**
151G **Summarizing**
151H **Observing**
151 I **Analyzing**

F151: Complete set of 9 captioned color filmstrips with teacher's manual
Individual filmstrip

## X331: LOOKING GREAT ON A SHOESTRING

This set introduces "teen-age" and "young adult" girls to some very basic concepts of "looking good". Which clothing styles work with your figure? What items do you buy at what quality? What does one take on a week-end? These and many other "how to's", "what to's, and "what not to's" are discussed. Rather than discuss specific tastes and styles, this set teaches a girl the general ideas and basics for looking good on a budget. The guide for each filmstrip follows the "end" frame. [J/S]

X331A **A History of Style and Vogue**
X331B **Finding What's Right For You**
X331C **Face Facts**
X331D **Figure Facts**
X331E **Putting it Together So It Works**
X331F **Doing it All on a Budget**

•T• TX331: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes

○ DX331: Complete set of 6 color filmstrips with 3 records
Individual filmstrip
Individual cassette
Individual record

## H357: HOSPITAL JOB OPPORTUNITIES

This filmstrip series explores the expanding job opportunities in our modern hospitals. Advanced technology has created jobs that didn't exist a few years ago; the opportunities are unmatched. The hospital world is clearly photographed and described to show some of the important jobs and to create a vital interest in them. The students follow the worker in his daily tasks and learn how many of these jobs interrelate to provide the essential services to our hospitals. The guide for each filmstrip follows the "end" frame. [J/S]

H357A **Inhalation Therapy Technician**
H357B **X-Ray Technician**
H357C **Nuclear Technician Trainee**
H357D **Medical Assistant**
H357E **Nurses' Aide**
H357F **Nurse**
H357G **Hospital Food Service Workers**
H357H **Diet Clerk and Fry Cook**
H357I **Maintenance Mechanic and Electrician and Custodian**
H357J **Hospital Administrative Jobs**

·T· TH357: Complete set of 10 color filmstrips with 5 cassette Teach-A-Tapes

◐ DH357: Complete set of 10 color filmstrips with 5 records
Individual filmstrip
Individual cassette
Individual record

## 387: WOODTURNING LATHE

Teaches most of the commonly-used operations of the wood lathe in a clear, close-up manner and depicts these operations as they are applied to the making of a product. Demonstrates the steps necessary to turn and shape wood—from preparing the stock to finishing and polishing the product. Indicates the proper tools, how to sharpen them and use them safely. Here is an assistant instructor for your woodworking class. [J/S]

83701 **Centering The Work For Spindle Turning**
83702 **Mounting The Work Between Centers**
83703 **Setting The Tool Rest**
83704 **Making The Roughing Cut**
83705 **Cutting Tools: Gouge, Skew, Square Nose Chisel**
83706 **Cutting Tools: Parting Tool, Round Nose, Spear Point**
83707 **Turning To A Finished Diameter**
83708 **Making The Shoulder Cut**
83709 **Turning The End Of A Square Section**
83710 **Spindle Taper Turning**
83711 **Preparing Work For The Faceplate**
83712 **Facing and Squaring An Edge On The Faceplate**
83713 **Shaping An Edge On A Faceplate Turning**
83714 **Shaping and Forming The Face On A Bowl**
83715 **Finishing And Polishing**

837: Complete set of 15 Super 8mm color films in Technicolor Cartridges with study guides
Individual cartridge

## X324: HOW WE BUILD THINGS

This instructional set is particularly designed to acquaint the intermediate student with the construction of the major man-made structures he sees in his everyday environment. The method used to follow the construction of such structures will prove most enlightening and keep the interest of the student keen. [I]

X324A **How We Build Houses**
X324B **How We Build Skyscrapers**
X324C **How We Build Cities**
X324D **How We Build Roads**
X324E **How We Build Bridges**
X324F **How We Build Ships**

·T· TX324: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes

◐ DX324: Complete set of 6 color filmstrips with 3 records
Individual filmstrip
Individual cassette
Individual record

## X338: FIELD TRIPS OUT OF THE ORDINARY

Students take many field trips to key places near them. This set takes the class to sites generally unavailable for actual trips. Through careful photography one sees each location and process more clearly than if one was there. The narration, simple art and explanation of each location has been prepared in cooperation with the experts who run these operations and installations. The last strip deals with the scientific research into yet untapped resources-using the Oceanographic Institute as a case study.
The guide for each filmstrip follows the "end" frame. [I/J]

X338A **A Field Trip to an Oil Well**
X338B **A Field Trip to A Coal Mine**
X338C **A Field Trip to A Steel Mill**
X338D **A Field Trip to A Lumber Mill**
X338E **A Field Trip to A Nuclear Plant**
X338F **Science for the Future—An Oceanographic Institute**

·T· TX338: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes

◐ DX338: Complete set of 6 color filmstrips with 3 records
Individual filmstrip
Individual cassette
Individual record

## 53: THE STORY OF COMMUNICATION

**BEGINNING** with the inarticulate sounds of primitive man, this series of filmstrips develops in an accurate and historical manner, the story of communication through the centuries. [P/I/J]

53A **Signs and Signals**
53B **Speaking and Writing**
53C **Paper and Books**
53D **Messengers**
53E **The Mail Goes Through**
53F **Communication by Sound**
53G **Communication by Sight**
53H **Communication by Electricity**
53 I **The Modern Means of Communication**

·T· TF53: Complete set of 9 captioned color filmstrips with 5 cassette Teach-A-Tapes and teacher's manual

F53: 9 captioned color filmstrips with teacher's manual
Individual filmstrip
Individual cassette

## 131: THE SPACE AGE

**GIVE YOUR STUDENTS** an insight into the history of space flight, its hazards and achievements. Pupils will derive additional motivation and interest in the material presented to stimulate their thinking and awareness toward scientific exploration. [I/J]

131A **Pioneers of Space**
131B **Exploration of Space**
131C **Atoms in Space**
131D **Aviation in the Space Age**
131E **The Conquest of Space**
131F **Man Travels in Space**
131G **Hazards in Space Travel**
131H **Destination in Space**
131 I **Stations on the Moon**

·T· TF131: Complete set of 9 captioned color filmstrips with 5 cassette Teech-T-Tapes and teacher's manual

F131: 9 captioned color filmstrips with teacher's manual
Individual filmstrip
Individual cassette

## X315: HOW THINGS ARE MADE

This set of filmstrips is designed to stir the child's curiosity - make him look at common, everyday items such as the shirt he is wearing, the car his parents drive, etc. and come to realize the combination of knowledge and talent that went into putting these items together.
Case studies of particular products are used for better and easier understanding. The guide for each filmstrip follows the "end" frame. [P/J]

| | |
|---|---|
| X315A | **Assembling a Car** |
| X315B | **Forming a Can** |
| X315C | **Processing Soup** |
| X315D | **Creating a Movie (or TV Program)** |
| X315E | **Making Clothing** |
| X315F | **Crafting a Chair** |

·T· TX315: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes

◐ DX315: Complete set of 6 color filmstrips with 3 records
Individual filmstrip
Individual cassette
Individual record

## 8-3: CAREERS IN AEROSPACE

The Aerospace industry has mushroomed into a giant service that offers jobs and opportunities that are literally unmatched by other fields. Use of these twelve sound filmstrips to give information and vocational direction by disclosing difficult-to-obtain information to your students as they consider the Aerospace Opportunities.
By seeing actual photographs taken on the job, the student will learn the importance of good working attitudes and he will observe the importance of interdependence in the Industry. He will see immediately the benefits of developing his own specialized and saleable skills. Broaden the horizons with these interesting studies of a vital industry—look into Aerospace with your students. [J/S]

| | |
|---|---|
| 8-3-A | **Jet Engine Mechanics** |
| 8-3-B | **Airline Ticket Agent** |
| 8-3-C | **Passenger Service Representative** |
| 8-3-D | **Flight Engineer** |
| 8-3-E | **Skycap and Baggage Handler** |
| 8-3-F | **Aircraft Maintenance Mechanic** |
| 8-3-G | **Stewardess** |
| 8-3-H | **Aerospace Sales Representative** |
| 8-3-I | **Aircraft Maintenance and Food Services** |
| 8-3-J | **Control Tower Operator** |
| 8-3-K | **Jet Captain** |
| 8-3-L | **Air Freight Agent** |

·T· TF8-3: Complete set of 12 color filmstrips with 6 cassette Teach-A-Tapes

◐ DF8-3: Complete set of 12 color filmstrips with 6 records
Individual filmstrip
Individual cassette
Individual record

## 828: WOODWORKING

In this series of 12 Super 8mm color films the student learns about the router with the dovetail fixture and their uses. A unique method called PROJECTED PRESENTATIONS helps the instructor to make learning clearer than he can do with the machine itself. Unusual animation techniques and greatly enlarged parts help each student to know exactly what is happening. Thus this material may be used with the whole class or used for introduction and review by individual students. Parts of the machine, kinds of cuts possible with the machine and safety practices are presented. Captions and subtitles are used throughout each film for more clarity. [J/S]

| | |
|---|---|
| 82801 | **Router: Its Parts** |
| 82802 | **Router: Bits and Inserting Them** |
| 82803 | **Router: Setting Bits and Trial Cuts** |
| 82804 | **Router: Finished Cuts and Accessories** |
| 82805 | **Router: Procedures and Safety** |
| 82806 | **Dovetail Fixture: Router Set-Up** |
| 82807 | **Dovetail Fixture: Parts and Fixture Set-Up** |
| 82808 | **Dovetail Fixture: Cutting the Joint** |
| 82809 | **Dovetail Fixture: Cut Assignments** |
| 82810 | **Dovetail Fixture: Drawer Assembly** |
| 82811 | **Dovetail Fixture: Rabbeted Drawer** |
| 82812 | **Dovetail Fixture: Procedures and Safety** |

828: Complete set of 12 Super 8mm color films in Technicolor Cartridges with study guides
Individual cartridge

## X335: EDUCATION FOR OCCUPATIONS

This series of eight filmstrips deals directly with the problem of helping the slow learner to contribute to the environment in which he will be living and working. The skills presented here will fit the student with the necessary tools for him to be able to reach his maximum level of vocational competency. The filmstrips lend themselves to integration with other courses of study in the curriculum. Now the student can see and learn about the jobs that he feels may be within his limit of skill and understanding. These filmstrips open the way for excellent discussion with the slow learners. Good training material. The guide for each filmstrip follows the "end" frame. [J/S] [Educable M.R.]

| | |
|---|---|
| X335A | **Working In A Service Station** |
| X335B | **Working In A Supermarket** |
| X335C | **Working In the Printing Industry** |
| X335D | **Working In Food Services** |
| X335E | **Working With Business Machines** |
| X335F | **Working In Building Maintenance** |
| X335G | **Working In Manufacturing** |
| X335H | **Working In A Hospital** |

·T· TX335: Complete set of 8 color filmstrips with 4 cassette Teach-A-Tapes

◐ DX335: Complete set of 8 color filmstrips with 4 records
Individual filmstrip
Individual cassette
Individual record

## X340: FINDING YOUR JOB

How do you find a job you can hold? How do you find out what else is available? How do you write a resume? How do you conduct yourself in a job interview? When do you look for another job?
The set realistically discusses and demonstrates for the student each of these points. The guide for each filmstrip follows the "end" frame. [J/S]

| | |
|---|---|
| X340 A | **Working for Someone Else** |
| X340 B | **What Can You Do?** |
| X340 C | **Job Shopping** |
| X340 D | **The Job Interview** |
| X340 E | **Getting a Better Job** |
| X340 F | **Finding a Career** |

·T· TX340: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes

◐ DX340: Complete set of 6 color filmstrips with 3 records
Individual filmstrip
Individual cassette
Individual record

## 7-2: GETTING TO KNOW ME

**THE INTENT OF THIS SET** is to provide the adolescent with an insight into himself and will enable him to cope with his day-to-day living. Each filmstrip assists the adolescent to become aware of his various developmental aspects. The sound filmstrips may be used with adolescent groups in courses in Family Living, Psychology and Guidance. The highlight topics lead to class participation with these studies. The extensive teacher's manual includes guide questions for review material, a suggested reading list as well as suggested activities list. [J]

7-2A **Adolescent—"Know Thyself"**
7-2B **Physical Development**
7-2C **Mental Development**
7-2D **Emotional Development**
7-2E **Social Development**
7-2F **How to Adjust**

[•T•] TF7-2: Complete set of 6 color filmstrips with 3 cassette
Teach-A-Tapes and teacher's manual

◐ DF7-2: Complete set of 6 color filmstrips with 3 records
and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## 34: MANNERS MAKE A DIFFERENCE

**REGARDLESS OF THE PLACE** or the situation, one's manners often create a lasting impression on others. This filmstrip series offers a guidance program of Good Manners and demonstrates how they can be cultivated. Unselfishness, thoughtfulness, and consideration are the important objectives stressed in this series. [I/J]

34A **Why We Need Good Manners**
34B **Good Manners at School**
34C **Good Manners at Home**
34D **Good Manners at Play**
34E **Good Manners on the Street and in Public Conveyances**
34F **Good Manners for Social Occasions**
34G **Good Table Manners**
34H **Good Manners in Friendship**

[•T•] TF34: Complete set of 8 color filmstrips with 4 cassette
Teach-A-Tapes and teacher's manual

◐ DF34: Complete set of 8 color filmstrips with 4 records
and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## X201: SOCIAL PROBLEMS OF OUR ENVIRONMENT

There are many present environmental problems which are social and economic in their making. Many of these can be rectified solely by man's attention. Even though man must worry about someday running out of space and food, he presently has nuclei of human centralization with vast useable open spaces 50 miles away. This imbalance of human density is a typical social problem of our environment. This set of filmstrips is designed to make the viewer aware of many of these problems and some of the possible adjustments man can make, often fairly easy ones, to improve the quality of life almost immediately. [S]

X201A **Wide Open Spaces and Human Sardine Cans**
X201B **Pollution, Unemployment and Inflation**
X201C **The Suicidal Society**
X201D **Poisons, Pills, Preservatives and Pressures**
X201E **The Public Good and Eminent Domain**
X201F **"There Ought to be a Law!"**

[•T•] TX201: Complete set of 6 sound filmstrips with 3 cassette
Teach-A-Tapes and teacher's manual

◐ DX201: Complete set of 6 sound filmstrips with 3 records and
and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## Y410: THE "NOW" GENERATION:
## Are They Changing Society?

Three different and basic points of view current among students and young adults today are presented in this three-part program. A look at today's youth, why they are different and what made them that way. Your students will agree and disagree with various parts of this program as they see and hear themselves discussed, challenged and analyzed by interviews with their own peers. An excellent series for discussion about the deep-lying problem of today. Good for adults as well as your students. [J/S/C]

Y410A **The Now Generation Part I The Rebels**
Y410B **The Now Generation Part II The Dropouts**
Y410C **The Now Generation Part III The Moderates**

[•T•] TY410: Complete set of 3 color filmstrips with 3 cassette
Teach-A-Tapes and teacher's manual

◐ DY410: Complete set of 3 color filmstrips with 3 records
and teacher's manual
Individual filmstrip and cassette
Individual filmstrip and record

## 818: TEEN SCENES

### A PATTERN FOR TEENAGE BEHAVIOR

The stories contained in this series of six super 8 films are concerned with situations that are both plausible and possible — the kind of thing that can happen to "almost anybody." They lead the students into a discussion of the situation presented. Although all of the stories point a moral, the moral is never thrust at the students in an obvious fashion. These are incidents that could occur at any time, in any place and to anyone. [I/J]

8181 **Cathy Writes An Essay (Should she confess that she cheated, that her essay was not original?)**
8182 **Jane And The Five-Dollar Bill (Do you return "found" money?)**
8183 **Bob Goes To A Party (When is one really "the life of the party?")**
8184 **Betty Sits With The Baby (On being responsible)**
8185 **Dotty's Big Date (Did she dress "fit to kill?")**
8186 **Larry Yee Makes The Team (About outsiders and cliques)**

818: Complete set of 6 Super 8mm color films in
Technicolor Cartridges with study guides
Individual cartridge

## X210: REAL PROBLEMS FACING US

This set of six color filmstrips is designed to cause students to become aware of some of the major problems facing mankind. As each of the filmstrips presents a separate area of conflict in society, the student is forced to ask questions and face decision making. Through this exercise, he gains insight for further exploration. [J/S]

X210A **Man and the Physical Environment**
X210B **Technology and the Individual**
X210C **Government and One Hundred Million People**
X210D **Humanity and the Need for Change**
X210E **Self Defeat and Ineffectuality**
X210F **The Individual and Education**

[•T•] TX210: Complete set of 6 color filmstrips and 3 cassette
Teach-A-Tapes

◐ DX210: Complete set of 6 color filmstripe with 3 records
Individual filmstrip
Individual cassette
Individual record

## W402: AMERICA'S LABOR FORCE

A comprehensive study of labor unions in the United States is dealt with in this set of six color sound filmstrips. The history of each of six unions, the forces that brought them into being, and their status today in the economic life of our country, is unfolded. Live interviews with union members, management and others involved are seen and heard. This series will bring about a greater understanding of the role labor plays in the sociological and economic life of our country. [J/S]

W402A **Airline Pilots Association**
W402B **American Federation of Musicians**
W402C **United Federation of Teachers**
W402D **United Automobile Workers**
W402E **International Brotherhood of Electrical Workers**
W402F **International Ladies Garment Workers Union**

·T· TW402: Complete set of 6 color sound filmstrips with 6 cassette Teach-A-Tapes and teacher's manual

◐ DW402: Complete set of 6 color sound filmstrips with 6 records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## 8-2: THE WONDERFUL WORLD OF WORK: VOCATIONAL OPPORTUNITIES

This filmstrip series attempts to bridge the information gap between schools and the business community. It provides an in-depth study of the world of work. The photographs show clearly how the worker goes about his everyday tasks. Here is a means to help the vocational counsellor and other teachers in any school, open doorways for his students. Although the student may be completely ignorant about certain job opportunities, these 14 filmstrips will show these jobs and create interest in them.

8-2A **What is Your Future in the Changing World of Work**
8-2B **Receptionist**
8-2C **Automobile Mechanic**
8-2D **TV and Radio Repair**
8-2E **Tool and Die Maker**
8-2F **Electrician**
8-2G **Printer**
8-2H **Sheet Metal Worker**
8-2 I **Automotive Sales Representative**
8-2 J **Cook**
8-2K **Data Processing Clerk**
8-2L **Sheet Metal Worker—Building Trades**
8-2M **Medical Assistant**
8-2N **Real Estate Sales**

Excellent photography allows you to follow the worker in his day-to-day on the job experience. Can be used with re-training adults too. [J/S]

·T· TF8-2: Complete set of 14 color filmstrips with 7 cassette Teach-A-Tapes and teacher's manual

◐ DF8-2: Complete set of 14 color filmstrips with 7 records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## 140: WORKERS FOR THE PUBLIC WELFARE

**THIS SET AIMS TO DEVELOP** concepts, understanding and appreciation of the many types of public workers whose major interest is the development of the health, safety and welfare of the people in whose community they serve. Excellent material for guidance and career study. [P/I]

140A **Police and Police Protection**
140B **Fire and Fire Fighters**
140C **The Post Office and Postal Workers**
140D **Education and the Teacher**
140E **The Library and the Librarian**
140F **Social Service and the Social Worker**
140G **Sanitation and the Sanitation Workers**
140H **Transportation and Transportation Workers**
140 I **Recreation, Park and Playground Workers**

F140: Complete set of 9 captioned color filmstrips with teacher's manual
Individual filmstrip

## 213: ARE YOU LOOKING AHEAD?

This series of ten captioned filmstrips presents a preview of some of the interesting job opportunities available to high school students. No attempt is made to teach the vocations. Instead, emphasis is on the qualifications needed to get and to hold a job. [J/S]

213A **How About Being an Electronics Assembler?**
213B **Would You Like to Sell?**
213C **Want to Work in a Laundry?**
213D **Do You Like Flowers?**
213E **Would You Like Hospital Work?**
213F **Do You Love Animals?**
213G **How About Office Work?**
213H **Do You Like Sports?**
213 I **How About Being a Key Punch Operator?**
213 J **Would You Like to Be a Cashier?**

F213: Complete set of 10 captioned color filmstrips with teacher's manual
Individual filmstrip

## 8-4: BUILDING TRADE WORKERS

This series introduces the student to the many job opportunities in the building trade. Informative pictures allow the viewer to see the step-by-step procedure concerning each job and hear valuable narration which will awaken an interest to pursue a very essential and satisfying trade. **The individualized learning guide which is included on each filmstrip allows the student to work and think for himself regarding each job.** It also provides the instructor with a basis for unlimited expansion for teaching in the vocational school. An extremely interesting set for young men.

| | | | |
|---|---|---|---|
| 8-4A | **The Exterior Painter** | 8-4F | **The Plasterer** |
| 8-4B | **The Interior Painter** | 8-4G | **The Sider** |
| 8-4C | **The Roughing Carpenter** | 8-4H | **The Brick Layer** |
| 8-4D | **The Finishing Carpenter** | 8-4I | **The Plumber** |
| 8-4E | **The Concrete Block Layer** | 8-4J | **The Roofer** |

TF8-4: Complete set of 10 color filmstrips with 5 cassette Teach-A-Tapes
DF8-4: Complete set of 10 color filmstrips with 5 records
Individual filmstrip
Individual cassette
Individual record

## X230: WHY DO WE ------?

This set will introduce to the student a variety of concepts of why man behaves as he does. The concepts selected all deal with man's physical habits. The child is introduced to the real reasons why man does these things rather than the oversimplified social reasons — i.e., we wear clothes to protect us from the environment, not because everyone else does. The set includes discussions of work, pay and play; rules and law; houses and clothing; growth, eating, sleeping and breathing; physical and emotional feeling; and death. [P/I]

| | | | |
|---|---|---|---|
| X230A | **Work and Play** | X230D | **Grow** |
| X230B | **Have Rules** | X230E | **Feel** |
| X230C | **Have Homes** | X230F | **Die** |

•T• TX230: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes
○ DX230: Complete set of 6 color filmstrips with 3 records
Individual filmstrip
Individual cassette
Individual record

## 169: DESIGN FOR HOME AND SCHOOL COOPERATION

**A TIMELY PROGRAM** of ten sound filmstrips to aid the administrator in providing helpful suggestions before local PTA meetings and parent groups. A comprehensive Leader's Guide furnishes the program chairman with the necessary aid in conducting informative meetings that are sure to please all participants.

| | | | |
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| 169A | **How to Help with Study Habits** | 169G | **How to Help with Safety, Health and Physical Education** |
| 169B | **Preparing the Child for School** | 169H | **How to Help with Reading** |
| 169C | **How to Help with Social Studies** | 169 I | **How to Help with Art and Music** |
| 169D | **How to Help with Science** | 169 J | **How to Help with Language Arts** |
| 169E | **How to Help with Arithmetic** | | |
| 169F | **How to Help with Homework** | | |

•T• TF169: Complete set of 10 color filmstrips with 5 cassette Teach-A-Tapes and teacher's manual
○ DF169: Complete set of 10 filmstrips with 5 records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## 49: THE STORY OF TRANSPORTATION

From the horse and the wheel, to the steamboat, locomotive and airplane, a dramatization showing how the development of civilization parallels the progress of transportation. The nine filmstrips and 30 large, beautifully colored wall charts give the student a dramatic pictorialization which will be long remembered. [P/I]

| | | | |
|---|---|---|---|
| 49A | **Transportation on Foot** | 49E | **Roads, Bridges, and Tunnels** |
| 49B | **The Wheel in Transportation** | 49F | **The Railroad in Transportation** |
| 49C | **Animals in Transportation** | 49G | **Transportation by Water** |
| 49D | **Transportation in the American Colonies** | 49H | **Transportation in the Air** |
| | | 49 I | **Modern Land Transportation** |

•T• TF49: Complete set of 9 captioned color filmstrips with 5 cassette Teach-A-Tapes, 30 charts and teacher's manual
F49: 9 captioned color filmstrips and 30 charts with teacher's manual
Individual filmstrip
Individual cassette
Extra set of 30 charts (C102, C103, C104)
(Transportation by air, land and water)

## X215: SAVING WHAT'S LEFT

In his new-found awareness of the ecological dangers facing the world, man is beginning to cope with those drastic long-range changes in man's behavior. A major and more short term need that must be studied simultaneously is the immediate conservation and proper application of our resources. This set of six color filmstrips deals with the immediate problem of saving what is left and the proper conservation of our resources in the immediate years. [J/S]

| | | | |
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| X215A | **When the Grass was Green and the Water Blue** | X215D | **Our Human Resources** |
| X215B | **Ill Fares the Land** | X215E | **Adding to our Resources** |
| X215C | **Utilizing our Resources** | X215F | **What is Conservation** |

•T• TX215: Complete set of 6 color filmstrips with 3 cassette Teach-A-Tapes and teacher's manual
○ DX215: Complete set of 6 color filmstrips with 3 records and teacher's manual
Individual filmstrip
Individual cassette
Individual record

## X77: URBAN ECOLOGY: SIX MICROSYSTEMS

Designed to introduce to students of Grades 4-8 the concept that ecology and environment are present in the cities as well as the country. This set of filmstrips investigates the ecology of six selected microsystems and compares these systems to both urban and suburban environments. [I/J]

| | | | |
|---|---|---|---|
| X77A | **A Paved School Yard** | X77D | **A Park Pond** |
| X77B | **A Vacant Lot** | X77E | **A Grass Yard** |
| X77C | **A Park** | X77F | **A Construction Site** |

X77: Complete set of 6 captioned color filmstrips with teacher's manual
Individual filmstrip

# THE WORLD OF WORK

**Sequence number one – THE ROLE OF A JOB**

This sequence describes the role a job plays in the life of every person. It illustrates the importance of a job from the standpoint of providing for the basic needs of the individual and the family.

**Sequence number two – DETERMINING THE RIGHT TYPE OF JOB**

This sequence provides a logical and systematic pattern for determining the right type of job by considering the factors of job requirements and individual traits.

**Sequence number three – PREPARING FOR THE JOB**

This sequence describes the means of qualifying for the right job through a consideration of physical, mental, educational, and emotional demands of the job, as well as the experience and skill level required.

**Sequence number four – FINDING THE JOB**

This sequence outlines procedures and methods of finding available jobs within an area and ways of locating specific jobs.

**Sequence number five – GETTING THE JOB**

This sequence outlines the do's and the don'ts involved in making the initial job contact, and follows through to the job interview.

**Sequence number six – WHAT THE EMPLOYER EXPECTS**

This sequence describes what an employee must do if he is to satisfy the employer. It initiates the study of what must be done to hold and to improve job position.

**Sequence number seven – GETTING ALONG WITH THE SUPERVISOR**

This sequence illustrates the role of the supervisor and the ways in which employees can best develop proper job relationships with the supervisor.

**Sequence number eight – GETTING ALONG WITH FELLOW WORKERS**

This sequence describes the interpersonal relationships between an individual and other employees on the job. It demonstrates that a successful work group can only exist in an atmosphere of harmony.

**Sequence number nine – THE ROLE OF PROFIT**

This sequence illustrates the role of money in the free enterprise system. It explains the need for and the benefits of profit.

**Sequence number ten – SEVEN FATAL SINS**

This sequence discusses the seven most frequently cited reasons for employees to be involuntarily removed from their jobs. It points out how these pitfalls can be avoided.

**Sequence number eleven – SEVEN VITAL VIRTUES**

This sequence presents the positive side of the attitude and behavior picture in that it emphasizes desirable attitudes and behavior patterns that will enhance job security and job improvement.

**Sequence number twelve – DEVELOPING GOOD JOB ATTITUDES**

This sequence provides a review of the total program and further stresses the importance of positive attitudes and harmonious relations with other members of a work group.

LINK ENTERPRISES, INC.
P. O. BOX 25
HOPE HULL, ALABAMA 36043

*Educational Communication Services*
HAROLD STEVENS
EDUCATIONAL CONSULTANT
(601) 583-6033
P O Box 1147
HATTIESBURG, MISS 39401

# *Educational Communication Services*

## BEHAVIOR (HC)

Situations in everyday working life are presented in this series in order to encourage viewers to interpret each scene as they wish. The loops have been designed as flexible learning aids for the general area of attitudes, values and standard in behavior at work.

**9405 Is This You?** – A young clerk watches a senior colleague chatting to the secretary, who hands over some envelopes from a drawer. Alone, the clerk takes stamps from the drawer and puts some money in a tin, and then puts a pencil in his pocket. The secretary is then seen in a supermarket where the cashier rings up the total cost of her purchases, and hands the secretary her change. The secretary is then seen outside looking carefully at the change.

**9406 Going for a Job I** – A boy is directed, in a rather shabby factory, to a man who, with two others, is examining a machine. The man looks at the boy at last, and takes him to an office. The interview is twice interrupted by the telephone, and the boy leaves the factory looking thoughtful.

**9407 Going for a Job II** – A boy is called from a waiting room in a modern factory to the Personnel Officer. He is interviewed and then fills in what appears to be an application form or test sheet. He is shown around the factory with a black lad, and both leave, talking together.

**9408 Work Tempo** – A male supervisor in a supermarket instructs two girls in stacking goods on shelves. He leaves and they start working and talking. One girl appears very slow while the others in the store are working fast. Faces of customers loom before the camera in rather frightening fashion.

**9409 Social Interaction** – The scene is a shoe shop. An assistant helps a middle-aged woman to try on shoes. She then hands her over to the younger assistant, who seems to get on well with the customer. Seeing this, the older girl takes over again. The customer's expression changes, and the younger assistant looks on.

**9413 Dad Goes to Work** – Dad goes to work on a building site – the high rise development which are a feature of modern urban life and contrasted with earlier industrial housing. The London underground system is also shown.

**9414 Brother Works at London Docks** – John's brother is seen at work at the London docks. Emphasised is the importance of the River Thames in relation to London's international trade.

## CREATIVITY (PIJ)

These Cinettes, are intended to stimulate the imagination of the viewer, so that, in one form or another, he will perform an original act of self expression. Images are juxtaposed and elaborated to produce a greater variety of response. The single image, with the use of the stop frame, is still valid, as is the use of part only of the film to produce a variety of end points. Because of the nature of this material, the way it will be used will vary widely depending on the situation. The films lend themselves admirably to experimentation.

**Disturbances**

**9348 Disturbances I**
**9349 Disturbances II**
**9350 Disturbances III**
**9351 Distrubances IV**
**9352 Disturbances V**

HAROLD STEVENS
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## Popularity Problems *Full Color*

### . . . Of Young Teens • *Jr. High*

**F785-1 — DISCOVERING THE REAL "YOU."** (50 frames, 10 minutes)

**F785-2 — BECOMING MORE SELF-CONFIDENT.** (52 frames, 12 minutes)

**F785-3 — THE ART OF FRIENDSHIP.** (49 frames, 10 minutes)

**F785-4 — THE NEED TO BELONG.** (50 frames, 11 minutes)

**F785-SAR — Set: 4 F/S, 2 Records . . . . $32.50**

Ⓒ **F785-SATC — Set: 4 F/S, 2 Cassettes . $36.50**

### . . . Of Older Teens • *Sr. High*

**F785-5 — ACCEPTING YOURSELF.** (50 frames, 12 minutes)

**F785-6 — LEARNING TO RELATE TO OTHERS.** (51 frames, 10 minutes)

**F785-7 — LEARNING TO RELATE TO GROUPS.** (50 frames, 10 minutes)

**F785-8 — HANDLING THE PRESSURES TO BE POPULAR.** (51 frames, 9 minutes)

**F785-SBR — Set: 4 F/S, 2 Records . . . $32.50**

Ⓒ **F785-SBTC — Set: 4 F/S, 2 Cassettes . . $36.50**

## Life Issues *Full Color*

### . . . Of Young Teens • *Jr. High*

**F792-1 — DISCOVERING WHAT LIFE IS ALL ABOUT.** (49 frames, 9 minutes)

**F792-2 — COMMITMENT — TO WHAT?** (50 frames, 9 minutes)

**F792-3 — LEARNING TO MAKE DECISIONS.** (49 frames, 10 minutes)

**F792-4 — SUCCESS — WHAT IS IT?** (46 frames, 9 minutes)

**F792-SAR — Set: 4 F/S, 2 Records . . . . $32.50**

Ⓒ **F792-SATC — Set: 4 F/S, 2 Cassettes . . $36.50**

### . . . Of Older Teens • *Sr. High*

**F792-5 — WHAT DO YOU BELIEVE ABOUT LIFE?** (50 frames, 10 minutes)

**F792-6 — CHOOSING A CAREER.** (51 frames, 10 minutes)

**F792-7 — PREPARING FOR MARRIAGE.** (49 frames, 10 minutes)

**F792-8 — RELATING TO THOSE IN AUTHORITY.** (50 frames, 11 minutes)

Ⓡ **F792-SBR — Set: 4 F/S, 2 Records . . . $32.50**

Ⓒ **F792-SBTC — Set: 4 F/S, 2 Cassettes . . $36.50**

## Dating Problems *Full Color*

### . . . Of Young Teens • *Jr. High*

**F784-1 — BEGINNING TO DATE.** (45 frames, 8 minutes)

**F784-2 — DATING FUNDAMENTALS.** (58 frames, 9 minutes)

**F784-3 — A LOOK AT GOING STEADY.** (45 frames, 8 minutes)

**F784-4 — YOUNG LOVE.** (45 fr., 8 min.)

**F784-SAR — Set: 4 F/S, 2 Records . . . . $32.50**

Ⓒ **F784 SATC — Set: 4 F/S, 2 Cassettes . . $36.50**

### . . . Of Older Teens • *Sr. High*

**F784-5 — DATING CONDUCT.** (45 fr., 8 min.)

**F784-6 — THE RESPONSIBILITIES OF DATING.** (45 frames, 10 minutes)

**F784-7 — THE REAL THING.** (45 fr., 8 min.)

**F784-8 — TAKING A LOOK AT MARRIAGE.** (53 frames, 11 minutes)

Ⓡ **F784-SBR — Set: 4 F/S, 2 Records . . . $32.50**

Ⓒ **F784-SBTC — Set: 4 F/S, 2 Cassettes . . $36.50**

## Family Problems

### . . . Of Young Teens • *Jr. High*

**F786-1 — THE PROBLEM WITH PARENTS.** (46 frames, 9 minutes)

**F786-2 — CUTTING THE APRON STRINGS.** (45 frames, 8 minutes)

**F786-3 — UNDERSTANDING BROTHERS AND SISTERS.** (43 frames, 8 minutes)

**F786-4 — THE TEEN'S ROLE IN A FAMILY.** (43 frames, 8 minutes)

**F786-SAR — Set: 4 F/S, 2 Records . . . . $32.50**

Ⓒ **F786-SATC — Set: 4 F/S, 2 Cassettes . . $36.50**

### . . . Of Older Teens • *Sr. High*

**F786-5 — INDEPENDENCE AND RESPONSIBILITY: A TWO-SIDED COIN.** (46 fr., 8 min.)

**F786-6 — THE COMMUNICATION GAP.** (42 frames, 8 minutes)

**F786-7 — BROKEN HOMES AND FAMILIES.** (40 frames, 7 minutes)

**F786-8 — FAMILIES ARE IMPORTANT.** (45 frames, 8 minutes)

**F786-SBR — Set: 4 F/S, 2 Records . . . . $32.50**

Ⓒ **F786-SBTC — Set: 4 F/S, 2 Cassettes . . $36.50**

Ⓡ ***Filmstrips With Records*** Ⓒ ***Filmstrips With Cassettes***

## Job Opportunities Now — Group 1 *Full Color • Jr.-Sr. High—College*

An informative new series of filmstrips introduces students to the world of work. Full-color on-site photographs and recorded narration provide students with information relative to job opportunities in several fields and stress jobs which do not require a college degree. Special emphasis is placed on the necessity of skills, proper work attitudes and education . . . motivates students to acquire needed skills and education. Excellent for Vocational Guidance programs.

**612-1 — REQUIREMENTS IN THE WORLD OF JOBS.** (62 frames, 14¼ minutes)
**612-2 — ACHIEVING SUCCESS IN THE WORLD OF JOBS.** (48 frames, 13¾ minutes)
**612-3 — JOB OPPORTUNITIES IN A RESTAURANT.** (61 frames, 14¼ minutes)
**612-4 — JOB OPPORTUNITIES IN A HOSPITAL.** (64 frames, 15¼ minutes)
**612-5 — JOB OPPORTUNITIES IN A DEPARTMENT STORE.** (58 frames, 14 minutes)
**612-6 — JOB OPPORTUNITIES IN A SUPERMARKET.** (57 frames, 14½ minutes)

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| **612-SAR — Set of 6 Filmstrips, 3 Records, 6 Teacher's Guides** | **Only $49.50** |
| Ⓒ **612-SATC — Set of 6 Filmstrips, 3 Cassettes, 6 Teacher's Guides** | **$55.50** |
| Each Filmstrip with accompanying Teacher's Guide | $ 7.00 |
| Individual Records, back-to-back | $ 4.00 |
| Individual Cassettes, back-to-back | $ 6.00 |

## Foundations For Occupational Planning *Full Color • Jr. High*

This meaningful set of captioned filmstrips aids students in evaluating their own individual characteristics and relating them to the world of work before them. Author: Walter Lifton, Ph.D., Rochester (New York) Public Schools.

**778-1 — WHO ARE YOU?** Shows and describes how the unique characteristics of each individual person contribute something valuable to society. (37 frames)

**778-2 — WHAT DO YOU LIKE TO DO?** Shows how individual interests, hobbies have different meanings for different people; outlines value of diversity of interests. (35 frames)

**778-3 — WHAT IS A JOB?** The values, characteristics and attitudes connected with different jobs. Describes various jobs and their aspects for viewers. (41 frames)

**778-4 — WHAT ARE JOB FAMILIES?** Shows how jobs are grouped according to interests and industry, training and aptitudes. (36 frames)

**778-5 — WHAT GOOD IS SCHOOL?** Emphasizes the importance of doing well in school for success in later life. Stresses mathematics, science, social studies, languages. (32 frames)

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| **778-SA — Set of 5 Captioned Filmstrips** | **Only $27.00** |
| Each Captioned Filmstrip | $ 6.00 |

## Vocational Decisions *Full Color • Jr.-Sr. High*

The variety of vocational avenues open to today's students is discussed in this series of full-color filmstrips. Emphasis is placed on considering abilities, interests and training when making vocational decisions. (Q•ED)

**C788-1 — AN INTRODUCTION TO VOCATION.** The vocation is considered as a major avenue of expression for one's life. Emphasizes opportunities. (49 frames, 18 minutes)

**C788-2 — THE WORLD OF WORK.** Why man works, why choice is a personal matter; how to choose potential vocation. (63 frames, 18 minutes)

**C788-3 — COUNSELING IN VOCATIONAL DECISIONS.** Value of outside assistance; respect of student's independence. (63 frames, 18 minutes)

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| **C788-SR — Set of 3 Filmstrips, 2 Records, 3 Teacher's Guides** | **Only $31.00** |
| Ⓒ **C788-STC — Set of 3 Filmstrips, 2 Cassettes, 3 Teacher's Guides** | **Only $32.50** |
| Each Filmstrip with accompanying Teacher's Guide | $ 8.00 |
| Individual Records, back-to-back | $ 5.00 |
| Individual Cassettes, back-to-back | $ 6.00 |

## School Skills For Today And Tomorrow *Full Color • Jr. High*

**779-1 — WHY STUDY?** Reasons for learning. Ways to improve study habits. (39 frames)

**779-2 — PREPARING TO STUDY.** Preparation of materials. Scheduling time. (39 frames)

**779-3 — LISTENING AND READING SKILLS.** Notes, outlines, memorization. (39 frames)

**779-4 — WHAT TO ASK, HOW AND WHERE TO FIND THE ANSWERS—PART 1.** How to find information; sources. (34 frames)

**779-5 — WHAT TO ASK, HOW & WHERE TO FIND THE ANSWERS—PART 2.** Checking one information source against another. (34 frames)

**779-6 — HOW TO TAKE A TEST.** Student's attitude toward tests. How to review, types of questions, budgeting time. (43 frames)

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| **779-S — Set of 6 Captioned Filmstrips** | **Only $32.40** |
| Each Captioned Filmstrip | $ 6.00 |

## Learning To Use A Sewing Machine *Full Color • Jr.-Sr. High—College—Adult*

To sew well beginners must develop proper habits as they learn to use a sewing macchine. In this fine filmstrip series students are encouraged to form good sewing habits as they perform easy-to-do exercises and witness simple demonstrations. Full-color photographs, including many extreme close-ups, portray details of the machine, hand positions, thread paths and stitching. Machine parts are clearly labeled and identified. Frequent bands on accompanying narration allow the teacher to stop presentations for class practice after each technique is introduced. Accompanying Teacher's Guides provide helpful information for lesson planning. This series was carefully developed under the supervision of Jessie Hutton, Director of Sewing Education for The Singer Company. Photographs are of the Singer **Touch & Sew** Sewing machine, Model 649.

**622-1 — BASIC PARTS AND THEIR FUNCTIONS.** A basic introduction to teach the parts of a sewing machine, how it makes a stitch and rules for machine operation. Simple exercises orient students to essential working parts. (49 frames, 12 minutes)

**622-2 — LEARNING TO GUIDE FABRIC.** A comprehensive study of guiding material through the machine shows basic methods for starting and ending seams; handling straight seams, square corners and curves; holding fabric; and using guidelines. (60 frames, 12 minutes)

**622-3 — HOW TO THREAD.** A step-by-step explanation of threading the needle, winding the bobbin and inserting previously wound bobbin. Close-up views enable students to see each step clearly. (67 frames, 14 minutes)

**622-4 — HOW TO STITCH.** A detailed explanation of stitching straight seams, correcting raveling, and using the seam guide to sew straight seams and curves. (Approx. 67 frames, 15½ minutes)

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| Ⓡ **622-SAR — Set of 4 Filmstrips, 2 Records, 4 Teacher's Guides** | **Only $32.50** |
| Ⓒ **622-SATC — Set of 4 Filmstrips, 2 Cassettes, 4 Teacher's Guides** | **Only $36.50** |
| Each Filmstrip with accompanying Teacher's Guide | $ 7.00 |
| Individual Records, back-to-back | $ 4.00 |
| Individual Cassettes, back-to-back | $ 6.00 |

## Introduction To Business Machines *Full Color • Jr.-Sr. High—College—Adult*

A comprehensive overview of all major classes of machines used in today's business offices. Full-color photographs portray machines in office settings serving typical office needs. The beginning student is familiarized with each type of machine and its capabilities. Excellent background for later specialized training. Consultant: John L. Adams, Supervisor of Office Education, Chicago Board of Education.

**613-1 — TYPEWRITERS.** A comprehensive look at standard manual and electric machines, automatic typewriters and other sophisticated machines having typewriter keyboard. (61 frames, 13 minutes)

**613-2 — DICTATING AND TRANSCRIBING MACHINES.** A detailed discussion of a typical dictating machine and its companion transcribing machine, with a look at portable machines, network dictating system and various kinds of recording media. (53 frames,, 11 minutes)

**613-3 — ADDING AND CALCULATING MACHINES.** Office situations demonstrate uses for full-bank and ten-key adders, and rotary and electronic calculators (for printing). (61 frames, 12 minutes)

**613-4 — DUPLICATING AND COPYING MACHINES.** Rounding out the analysis of different office machines is a look at spirit, stencil and offset duplicators; thermographic, diazo and electrostatic processing copiers. (68 frames, 13½ minutes)

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|---|---|
| Ⓡ **613-SAR — Set of 4 Filmstrips, 2 Records, 4 Teacher's Guides** | **Only $32.50** |
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## Industry In 20th-Century America — Group 1 *Full Color • Jr.-Sr. High*

A unique filmstrip series relates knowledge of specific tools, materials and processes to the TOTAL production operation. Functions of industrial departments are simulated in class projects.

**636-2 — INDUSTRIAL ENGINEERING.** How time-motion studies, plant layout, other operations increase efficiency. (48 frames, 16 minutes)

**636-3 — PRODUCTION ENGINEERING.** Coordinating machines, materials and workers for maximum efficiency. (46 frames, 12½ minutes)

**636-4 — PLANT ENGINEERING.** How this department provides and maintains utility systems and facilities. (41 frames, 10 minutes)

**636-5 — MANUFACTURING.** Development of product from initial production of individual parts to final assembly. (46 frames, 11½ minutes)

**636-6 — QUALITY CONTROL.** Quality standards, tests and samplings. (54 frames, 18 minutes)

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| Each Filmstrip with accompanying Teacher's Guide | $ 7.00 |
| Individual Records, back-to-back | $ 4.00 |
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## Metalworking *Full Color • Jr.-Sr. High—Adult*

An informative introduction to the basic procedures of metalworking. Full-color photographs orient industrial arts students to basic tools and show their functions in actual shop situations. Step-by-step photos analyze specific metalworking processes in close-up detail. Produced in cooperation with Instructional Dynamics, Inc. Technical Advisor: Coleman Hewitt, M.S. (Each filmstrip approx. 55 frames, 14 minutes)

**639-1 — LAYOUT AND MEASUREMENT.** Tools and procedures for layout and measurement including rules, combination set, dividers, calipers, surface gauge, use of micrometer.

**639-2 — CUTTING.** Demonstrates cutting procedures of sawing (hand and power), snipping, chipping and filing.

**639-3 — DRILLING, TAPPING AND THREADING.** Informative demonstrations show types of drills, step-by-step illustrations of drill press procedures, types of threading systems, use of taps and dies to cut threads on stock.

**639-4 — SHAPING AND FASTENING.** Accurate detailed demonstrations show specific bending and raising techniques; simple soldering and riveting procedures; use of screws, bolts, washers and nuts in the metalworking process.

**639-SAR — Set: 4 Filmstrips, 2 Records,**
**4 Teacher's Guides .........Only $32.50**

Ⓒ **639-SATC — Set: 4 Filmstrips, 2 Cassettes,**
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## Power Tools For Woodworking *Full Color • Jr.-Sr. High—Adult*

Informative filmstrips familiarize students with portable and stationary power tools used in woodworking. Photos stress functions, applications, safety rules and detailed instructions for tools described. Excellent material for Industrial Arts classes. Produced in cooperation with Instructional Dynamics, Inc.

### Group 1 — Portable Power Tools

**638-1 — SAWING, DRILLING AND SMOOTHING.** (61 frames, 18 minutes)
**638-2 — SANDING AND SHAPING.** (48 frames, 13¼ minutes)

**638-SAR — Set: 2 Filmstrips, 1 Record,**
**2 Teacher's Guides .............$18.00**

Ⓒ **638-SATC — Set: 2 Filmstrips, 1 Cassette,**
**2 Teacher's Guides .............$20.00**
Each Filmstrip with Guide ................$ 7.00
Record ..........$4.00, Cassette .........$ 6.00

### Group 2 — Stationary Power Tools

**638-3 — STRAIGHT SAWING.** (59 frames, 14¾ minutes)
**638-4 — CURVED SAWING AND DRILLING.** (54 frames, 15¾ minutes)
**638-5 — SMOOTHING AND SHAPING.** (47 frames, 12 minutes)
**638-6 — SANDING.** (50 frames, 12¼ minutes)
**638-7 — THE LATHE — SPINDLE TURNING.** (50 frames, 14 minutes)
**638-8 — THE LATHE — FACEPLATE TURNING.** (50 frames, 12½ minutes)

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**638-SR — Complete Set of 8 Filmstrips, 4 Records, 8 Teacher's Guides .........Only $64.50**
**638-STC — Complete Set of 8 Filmstrips, 4 Cassettes, 8 Teacher's Guides ......Only $72.50**

## Basic Tools For Woodworking *Full Color • Jr.-Sr. High—Adult*

Step-by-step orientation in woodworking process through description of tools and their proper implementation. Full-color photos with accompanying narration demonstrate functions of tools used in measuring, cutting, boring and assembly phases. Author: Coleman Hewitt, M.S., Chm., Dept. of Industrial Ed., Chicago State College. Each filmstrip App. 55 fr., 16½ min. Produced in cooperation with Instructional Dynamics, Inc.

**637-1 — MEASURING AND LAYOUT TOOLS.** Shows how to make accurate measurements, explains layout techniques, demonstrates proper selection and handling of tools.

**637-2 — CUTTING TOOLS.** Explains basic cutting, smoothing, shaping. Shows functions, handling of saws, planes and chisels.
**637-3 — BORING TOOLS.** Identifies drills, bits and boring accessories. Demonstrates the use of hand and power tools.
**637-4 — TOOLS FOR ASSEMBLY.** Fasteners and driving tools. Methods of fastening wood pieces, how to select proper fastener.

**637-SAR — Set: 4 Filmstrips, 2 Records,**
**4 Teacher's Guides .........Only $32.50**
Ⓒ **637-SATC — Set: 4 Filmstrips, 2 Cassettes,**
**4 Teacher's Guides .........Only $36.50**
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Educational Sensory Programming, 2340 E. Johnson, Jonesboro, Ark. 72401

# American Occupations” Series

| LESSON No. | TITLE | LESSON No. | TITLE |
|---|---|---|---|
| ☐ 4501 < | “Tomorrow’s Jobs – Part I”<br>“Tomorrow’s Jobs – Part II” | ☐ 4525 < | “Chemists”<br>“Physicists” |
| ☐ 4502 < | “Accountant”<br>“Advertising Workers” | ☐ 4526 < | “Astronomers”<br>“Actor – Actress” |
| ☐ 4503 < | “Marketing Research Workers”<br>“Personnel Workers” | ☐ 4527 < | “Dancers”<br>“Musicians and Music Teachers” |
| ☐ 4504 < | “Public Relations Workers”<br>“Protestant Clergymen” | ☐ 4528 < | “Singers and Singing Teachers”<br>“Commercial Artists” |
| ☐ 4505 < | “Rabbis”<br>“Roman Catholic Priests” | ☐ 4529 < | “Industrial Designer”<br>“Interior Decorator” |
| ☐ 4506 < | “Forresters”<br>“Forrestry Aids” | ☐ 4530 < | “Anthropologists”<br>“Economists” |
| ☐ 4507 < | “Range Managers”<br>“Employment Counselors” | ☐ 4531 < | “Geographers”<br>“Historians” |
| ☐ 4508 < | “Rehabilitation Counselors”<br>“School Counselors” | ☐ 4532 < | “Political Scientists”<br>“Sociologists” |
| ☐ 4509 < | “Engineering”<br>“Types of Engineering” | ☐ 4533 < | “Kindergarten and Elementary School Teacher”<br>“Secondary School Teacher” |
| ☐ 4510 < | “Physicians”<br>“Osteopathic Physicians” | ☐ 4534 < | “College and University Teachers”<br>“Engineering Science” |
| ☐ 4511 < | “Dentists”<br>“Dental Hygienists” | ☐ 4535 < | “Draftsman”<br>“Newspaper Reporter” |
| ☐ 4512 < | “Dental Assistant”<br>“Dental Lab. Technician” | ☐ 4536 < | “Technical Writers”<br>“Architects” |
| ☐ 4513 < | “Registered Nurses”<br>“Liscensed Practical Nurses” | ☐ 4537 < | “College Placement Officer”<br>“Home Economists” |
| ☐ 4514 < | “Optometrists”<br>“Pharmacists” | ☐ 4538 < | “Landscape Architects”<br>“Lawyers” |
| ☐ 4515 < | “Podiatrists”<br>“Chiropractors” | ☐ 4539 < | “Librarians”<br>“Library Technicians” |
| ☐ 4516 < | “Occupational Therapist”<br>“Physical Therapist” | ☐ 4540 < | “Models”<br>“Photographers” |
| ☐ 4517 < | “Speech Pathologist and Audiologist”<br>“Medical Laboratory Worker” | ☐ 4541 < | “Systems Analysts”<br>“Programmers” |
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| ☐ 4519 < | “Dieticians”<br>“Hospital Administrator” | ☐ 4543 < | “Social Workers”<br>“Surveyors” |
| ☐ 4520 < | “Sanitarians”<br>“Veterinarians” | ☐ 4544 < | “Urban Planners”<br>“Managerial Occupations” |
| ☐ 4521 < | “Mathmeticians”<br>“Statisticians” | ☐ 4545 < | “Industrial Traffic Manager”<br>“Purchasing Agent” |
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| ☐ 4523 < | “Meterologists”<br>“Oceanographers” | ☐ 4547 < | “Cashiers”<br>“Electronic Computor Operators” |
| ☐ 4524 < | “Life Scientists”<br>“Biochemists” | A-19 ☐ 4548 < | “Office Machine Operator”<br>“Shipping – Receiving Clerk” |

# "American Occupations" Series

| | LESSON No. | TITLE |
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| ☐ | 4549 < | "Stenographer — Secretary"<br>"Typists" |
| ☐ | 4550 < | "Telephone Operator"<br>"Auto Parts Counter Man" |
| ☐ | 4551 < | "Auto Salesman"<br>"Auto Service Advisor" |
| ☐ | 4552 < | "Insurance Agent — Broker"<br>"Manufacturer's Salesman" |
| ☐ | 4553 < | "Real Estate Salesmen — Broker"<br>"Retail Trade Salesworker" |
| ☐ | 4554 < | "Securities Salesman"<br>"Wholesale Trade Workers" |
| ☐ | 4555 < | "Barbers"<br>"Cosmetologists" |
| ☐ | 4556 < | "Cooks — Chefs"<br>"Waiters — Waitresses" |
| ☐ | 4557 < | "FBI Special Agents"<br>"Police Officers" |
| ☐ | 4558 < | "State Police Officers"<br>"Fire Fighters" |
| ☐ | 4559 < | "Hospital Attendants"<br>"Building Custodians" |
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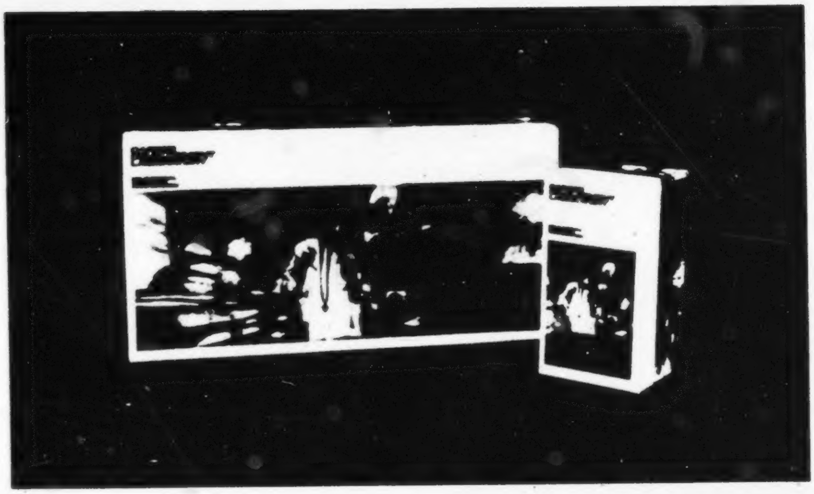
| ☐ | 4561 < | "Cement Mason"<br>"Construction Laborer" |
| ☐ | 4562 < | "Electricians"<br>"Elevator Construction" |
| ☐ | 4563 < | "Floor Covering Installers"<br>"Glaziers" |
| ☐ | 4564 < | "Lathers"<br>"Marble Setters" |
| ☐ | 4565 < | "Operating Engineers"<br>"Painters and Paperhangers" |
| ☐ | 4566 < | "Plasterers"<br>"Plumbers and Pipefitters" |
| ☐ | 4567 < | "Roofers"<br>"Sheet Metal Workers" |
| ☐ | 4568 < | "Stonemasons"<br>"Structural Steel Workers" |
| ☐ | 4569 < | "Truckdriver"<br>"Local Truckdriver" |
| ☐ | 4570 < | "Routemen"<br>"Intercity Busdriver" |
| ☐ | 4571 < | "Local Busdriver"<br>"Taxi Drivers" |
| ☐ | 4572 < | "Machinists"<br>"Machine Tool Operator" |
| ☐ | 4573 < | "Tool and Die Maker"<br>"Instrument Maker" |
| ☐ | 4574 < | "Air Conditioning Mechanic"<br>"Appliance Servicemen" |
| ☐ | 4575 < | "Auto Body Repairmen"<br>"Auto Mechanics" |
| ☐ | 4576 < | "Business Machine Servicemen — part I"<br>"Business Machine Servicemen — part II" |
| ☐ | 4577 < | "Diesel Mechanics"<br>"Electric Sign Servicemen" |
| ☐ | 4578 < | "Farm Equipment Mechanic"<br>"Industrial Machinery Repairmen" |
| ☐ | 4579 < | "Instrument Repairman"<br>"Maintenance Electrician" |
| ☐ | 4580 < | "Millwrights"<br>"Radio—T.V. Technician" |
| ☐ | 4581 < | "Truck and Bus Mechanic"<br>"Vending Machine Mechanic" |
| ☐ | 4582 < | "Watch Repairman"<br>"Composing Room Occupation" |
| ☐ | 4583 < | "Photoengravers"<br>"Electro — Stereotypers" |
| ☐ | 4584 < | "Printing Pressmen"<br>"Lithographics" |
| ☐ | 4585 < | "Motion Picture Projectionist"<br>"Photographic Laboratory Occupation" |
| ☐ | 4586 < | "Petroleum Occupations — part I"<br>"Petroleum Occupations — part II" |
| ☐ | 4587 < | "Pilots — Copilots — part I"<br>"Pilots—Copilots—part II" |
| ☐ | 4588 < | "Flight Engineers"<br>"Stewardess" |
| ☐ | 4589 < | "Aircraft Mechanics"<br>"Airplane Dispatcher" |
| ☐ | 4590 < | "Air Traffic Controller"<br>"Ground Radio Operator" |
| ☐ | 4591 < | "Radio — T.V. Announcer<br>"Broadcast Technician" |
| ☐ | 4592 < | "Locomotive Engineer"<br>"Conductor" |
| ☐ | 4593 < | "Brakeman"<br>"Telegrapher" |
| ☐ | 4594 < | "Telephone Craftsman"<br>"Telephone Equipment Installer" |
| ☐ | 4595 < | "Lineman —Cable Splicer"<br>"Telephone Repair — Installer" |
| ☐ | 4596 < | "Bank Clerk"<br>"Teller" |
| ☐ | 4597 < | "Hotel Clerk"<br>"Hotel Manager" |
| ☐ | 4598 < | "Federal Civilian Government Worker — part I"<br>"Federal Civilian Government Worker — part II" |
| ☐ | 4599 < | "Mail Carriers"<br>"Postal Clerks" |

# CAREER DEVELOPMENT LABORATORY

The choice of an occupation is one of the most important decisions a person must make. A mistake may be difficult or impossible to rectify. Therefore, every avenue of information must be explored prior to making a choice.

Career Development Laboratory offers a completely new way for a student to gather occupational information. By means of a survey*, he is guided to one or more taped interviews. These interviews are with people who are successful in the occupation or career being considered. The tapes allow him to hear the facts from someone who really knows the occupation.



The Career Development Laboratory is made up of sixty recorded interviews. Of these, forty are on professional careers, twenty are on semi-professional occupations. Typical of the 60 interviews are:

- Policeman
- Computer Programmer
- Recreation or Park Director
- Commercial Artist
- Stockbroker
- Chemist
- Reporter
- Editor
- Librarian
- Veterinarian
- Electrician
- Physical Therapist
- Airline Hostess
- Cosmotologist
- Dentist

*Fifty survey forms are included with the laboratory. Additional forms are available.